Naval Surface Warfare Center
Carderock Division
West Bethesda, MD 20817-5700

NSWCCD-20-TR-2003/05 July 2003

Total Ship Systems Directorate

Technical Information Systems Department

Technical Report

WEB-BASED INTERACTIVE ELECTRONIC

TECHNICAL MANUAL (IETM)

COMMON USER INTERFACE

STYLE GUIDE

Version 2.0 – July 2003

by

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Report Documentation Page		*Form Approved* *OMB No. 0704-0188*
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1. REPORT DATE **JUL 2003**	2. REPORT TYPE	3. DATES COVERED **00-00-2003 to 00-00-2003**
4. TITLE AND SUBTITLE **Web-Based Interactive Electronic Technical Manual (IETM) Common User Interface Style Guide Version 2.0**		5a. CONTRACT NUMBER
		5b. GRANT NUMBER
		5c. PROGRAM ELEMENT NUMBER
6. AUTHOR(S)		5d. PROJECT NUMBER
		5e. TASK NUMBER
		5f. WORK UNIT NUMBER
7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) **Naval Surface Warfare Center,Carderock Division,9500 MacArthur Blvd,West Bethesda,MD,20817-5700**		8. PERFORMING ORGANIZATION REPORT NUMBER
9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES)		10. SPONSOR/MONITOR'S ACRONYM(S)
		11. SPONSOR/MONITOR'S REPORT NUMBER(S)
12. DISTRIBUTION/AVAILABILITY STATEMENT **Approved for public release; distribution unlimited**		
13. SUPPLEMENTARY NOTES **The original document contains color images.**		
14. ABSTRACT		
15. SUBJECT TERMS		

16. SECURITY CLASSIFICATION OF:			17. LIMITATION OF ABSTRACT	18. NUMBER OF PAGES	19a. NAME OF RESPONSIBLE PERSON
a. REPORT **unclassified**	b. ABSTRACT **unclassified**	c. THIS PAGE **unclassified**		**111**	

Standard Form 298 (Rev. 8-98)
Prescribed by ANSI Std Z39-18

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ACKNOWLEDGEMENTS

FORWARD

1. This guide is provided for use by all Departments and Agencies of the Department of Defense.

2. Beneficial comments (recommendations, additions, deletions) and any pertinent data which may be of use in improving this document should be addressed to: Commander, Naval Sea Systems Command, 1333 Isaac Hull Ave. SE, Washington, DC, 20376-0001, Attention: Mr. L. A. McGowan, by letter. Future versions of this document will incorporate changes dictated by the comments.

3. This guide cannot be cited as a requirement. If it is, the contractor does not have to comply.

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SECTION 1 INTRODUCTION

1.1 SCOPE

The scope of this document is limited to addressing Interactive Electronic Technical Manuals (IETMs) likely being maintained in Standard Generalized Markup Language (SGML) or Extensible Markup Language (XML). These IETMs are to be viewed with a standard browser such as Microsoft's® Internet Explorer or Netscape's® Navigator and delivered to run under Advanced Technical Information Support (ATIS), an intra/internet, or a combination thereof.

This document is intended to be used by all activities developing and delivering IETMs and associated products in support of Team Submarine for use on board United States Navy submarines.

1.2 PURPOSE

The primary purpose of this guide is to establish common minimum requirements for the look and feel, or style, of web-based IETMs. The goal of a common look and feel is ultimately in the best interest of the end user. As migration toward shared data and sailors trained across multiple platforms and equipment increases, the opportunity and responsibility, especially to the end users, is to establish robust standards for a common look and feel (and operation) of products.

The goal is to have the general look and feel of resultant IETMs be such that the end user cannot tell if an IETM was created at one activity or another. Interaction with other IETMs, and the library itself, is similar, no matter what activity created the IETM.

1.3 USE

In order to properly use this document, one must understand the approach that was taken in developing it and how it is structured. In general, the document attempts to establish a baseline environment for IETM developers to use for guidance.

Section 1 defines to what this document applies, the goal of this document, to whom it applies, and the basic assumptions made in preparing the document. Section 2 is self-explanatory. Section 3 is the the requirements section which provides an overview, and the requirements for IETM screen layouts, style, and format, and the user interface. Section 3.2 focuses on the requirements for the screen layouts inside the IETM itself, or the Inner Shell, section 3.3 discusses the general presentation requirements of an IETM, and section 3.4 covers IETM user interface issues.

The appendices contain various detailed information supporting section 3, including example user interface Inner Shell screens, a Table of Standard Icons, Technical Data Set for change handling information, and a discussion of operating domains and linking.

1.4   INTENDED AUDIENCE

The intended audience for this document is primarily IETM developers and deliverers. The document applies to all Team Submarine IETM acquisition and development activities, including the creators and developers of the IETMs (both with regard to the IETM content and the selection of presentation software used to display that content). This document can also be used as a guide for IETM developers by other DoD activities.

1.5   ASSUMPTIONS

In preparing this document, the following assumptions apply:

1. Browsers: The standard Navy downloads associated with IT21 and NMCI should be the target browsers. The NMCI approved browsers currently are Internet Explorer version 5.5 SP 2 128 bit and Netscape 4.76. If the NMCI approved browsers change, the change should be implemented while maintaining the user interface specified in this document.

2. Source Markup Language: It is assumed that the IETM's source markup files will be derived from an approved DTD or Schema from the Navy DTD/FOSI Repository. http://navycals.dt.navy.mil/dtdfosi/reposdtd.html

3. Delivery Markup Language: It is assumed that the IETMs will be delivered in a version of either HTML or XML appropriate for the browser. (Scripting languages and add-ons/plug-ins are a separate issue.)

4. It is assumed that the runtime environment includes network ATIS and that compliance and interaction with ATIS is required.

5. Specific program requirements are not addressed.

SECTION 2 APPLICABLE DOCUMENTS, REFERENCES AND DEFINITIONS

2.1 GENERAL

The documents listed below are not necessarily all of the documents referenced herein but are the ones that are needed in order to fully understand the information provided by this guide. Other references are cited throughout this document where they are used. These specifications, standards, and handbooks form a part of this document to the extent specified herein. Unless otherwise specified, the issues of these documents are those listed in the latest issue of the Department of Defense Index of Specifications and Standards (DoDISS), and supplements thereto, and are referenced for guidance only. Unless otherwise indicated, copies of the above specifications, standards, and handbooks are available from the Standardization Document Order Desk, 700 Robbins Avenue, Building 4D, Philadelphia, PA 19111.

2.2 DOCUMENTS / STANDARDS

2.2.1   Naval Sea Systems Command (NAVSEA) / Space and Naval Warfare Systems Command (SPAWAR)

1. Team Submarine Policy and Guidance for Acquisition and Conversion of LTD to Digital Form for Submarine Programs Draft Version C

2. Product Developers' Guidelines For the VIRGINIA Class Digital Library, June 18, 1999, Prepared for: PMS450, Prepared by: Electric Boat Corporation

3. IETM Classes, http://navycals.dt.navy.mil/ietm/ietm.html

4. Procedures for Submitting Interactive Electronic Technical Manuals for ATIS Compatibility Testing, NAVSEALOGCEN DET LANT NSWC Indian Head, MD, Prepared by Code ND092K, April 1, 2001 Revision 6, http://navysgml.dt.navy.mil/ietm/ietmdeve.html

5. NAVSEA/SPAWAR Technical Manual Management Program (TMMP) Operations and Life Cycle Support Procedures, Revision 2, July 1, 2000, http://nsdsa.phdnswc.navy.mil/

6. Interactive Electronic Technical Manual (IETM) Process Plan, S0005-AD-PRO-010, March, 1997

2.2.2   Department of the Navy (DoN)

1. DoN Guidance on Acquisition and Conversion of Logistics Technical Data to Digital Form, 21 Jul 1999, http://navycals.dt.navy.mil/calsdata/DAG.fin.990804.htm

2. DoN Policy on Digital Logistics Technical Data, 02 Nov 02 1999, http://navycals.dt.navy.mil/calsdata/Policy.fin.990930.htm

3. Navy Enterprise Application Development Guide Version 1.0, October 25, 2002
   https://tfw-opensource.spawar.navy.mil/

2.2.3   Department of Defense (DoD)

1. DoD Handbook for Interoperability of Interactive Electronic Technical Manuals, MIL-HDBK 511, 15 May 2000, http://navycals.dt.navy.mil/ietm/ietm.html

2. Defense Information Infrastructure (DII) Common Operating Environment (COE), http://diicoe.disa.mil/coe/

3. DoD Joint Technical Architecture (JTA), http://www-jta.itsi.disa.mil/

4. Markup Requirements and Generic Style Specification for Exchange of Test and Its Presentation, MIL-PRF-28001C, 2 May 1997, http://navycals.dt.navy.mil/cals/documents/28001C.pdf

5. Application of MIL-PRF-28001 Using Standard Generalized Markup Language (SGML), MIL-HDBK-28001, 30 June 1995, http://astimage.daps.dla.mil/docimages/0002/23/06/28001.PD5

2.2.4   Other Government

1. IETM User-Interaction ("Look and Feel") Guidelines for Aerospace Industries Association AIA, Technical Publications Symposium May, 1999, http://navycals.dt.navy.mil/ietm/ietm.html

2. Interactive Electronic Training Manual (IETM) Guide, First Edition, September, 1999, Defense Systems Management College Press, Fort Belvoir, VA, http://www.dau.mil/pubs/misc/ietm%5F00%2D02.doc

2.2.5   Order of Precedence

     In the event of a conflict between the text of this document and the references cited herein, the text of this document takes precedence. Nothing in this document, however, supersedes applicable laws and regulations unless a specific exemption has been obtained.

2.3   ACRONYMS / DEFINITIONS

2.3.1   Acronyms Used in this Guide

ACN	Advanced Change Notice
ASF	Advanced Streaming Format
ATIS	Advanced Technical Information Support
BMP	BitMap
CALS	Continuous Acquisition and Life-Cycle Support
CGM	Computer Graphic Metafile

COE	Common Operating Environment
COTS	Commercial Off-the-Shelf
DAPS	Document Automation and Production Service
DII	Defense Information Infrastructure
DoD	Department of Defense
DoDISS	Department of Defense Index of Specifications and Standards
DoN	Department of the Navy
GIF	Graphic Interchange Format
IETM	Interactive Electronic Technical Manual
I/O	Input/Output
IPB	Illustrated Parts Breakdown
IT-21	Information Technology for the 21st Century
JEDMICS	Joint Engineering Data Management Information and Control System
JPEG	Joint Photographic Experts Group
JTA	Joint Technical Architecture
LOC	List of Changes
LOI	List of Illustrations
LOT	List of Tables
MPEG	Moving Picture Experts Group
NAVSEA	Naval Sea Systems Command
NIFF	Navy Image File Format
NMCI	Navy Marine Corps Intranet
NSDSA	Naval Systems Data Support Activity
NSWCCD	Naval Sea Warfare Center Carderock Division
ODA/ODIF	Office Document Architecture / Office Document Interchange Format
PDA	Personal Digital Assistant
PDF	Portable Document Format
POD	Print On Demand
RAC	Rapid Action Change
SGML	Standard Generalized Markup Language
SPAWAR	Space and Naval Warfare Systems Command
SSL	Secure Sockets Layer
SSM	Ship Systems Manual
SSO	Single Sign On
SVG	Scalable Vector Graphics
TDKM	Technical Data Knowledge Management
TDMIS	Technical Data Management Information System
TFW	Task Force Web
TIFF	Tiled Image File Format
TM	Technical Manual
TMDER	Technical Manual Deficiency/Evaluation Report
TMIN	Technical Manual Identification Number
TMMP	Technical Manual Management Program
TMPOD	Technical Manual Print On Demand
TOC	Table of Contents
UFS	User Facing Service

W3C   World Wide Web Consortium
WEN   Web Enabled Navy
WMA   Windows Media Audio
WMV   Windows Media file with Audio/Video
XML   Extensible Markup Language

2.3.2   Definitions of Selected Terms

Annotations: Annotations are the ability of the system administrator or user to place special notes within a manual. These notes can be public information for all users, such as special information that requires rapid deployment to the manual holders (e.g., "Advance Change Notices"). They also can be private notes needed only by the user to assist in their training or in the performance of their duties.

Audit Trails: Audit trails are the ability of the IETM or system to know where the user has navigated within the IETM or the system.

Bookmark: Bookmarks are the capability to mark areas of interest to allow quick access. In today's environment, the terminology bookmark has been expanded to include "Favorites" and "Shortcuts."

Cascading Menus: A cascading menu is the child of the first menu item selected. In both the drop-down menu format and the pop-up menu format, the child menu appears next to the first menu item selected. There may be several levels of cascading menus.

Context Filtering: Context filtering is when the presentation system automatically displays the relevant information applicable to the existing situation. For an example, only a specific piping system would be displayed in a compartment diagram or the level of instructions would be filtered based on the users level of ability (novice vice expert).

Dialogs: Dialogs are the pop-ups and in-line collection mechanisms for gathering information for the IETM from the user.

Guide Post: The Guide Post is the part of the User Navigation Panel that allows the user to get to and initiate special advanced functions or to return to the standard default ribbon bar.

Inner Shell: The Inner Shell is the portion of the IETM, within the browser shell, provided as the client application display area. This is the only portion of the screen real-estate under the developer's control.

Outer Shell: The Outer Shell is the portion of the screen that surrounds the Inner Shell. This part of the screen should not be modified or controlled by the developer.

Pop-Up Menus: Pop-up menus are menus that the user specifically invokes by right mouse clicking. The pop-up menu appears at the cursor location.

Screen Stacking: Screen stacking is when there are several windows open at the same time that are stacked one on top of each other in a staggered fashion. Screen stacking can confuse the novice user and is to be avoided.

Session Control: Session control is the ability to stop and start an IETM session in the middle of work. For highly interactive IETMs, this involves saving the state of the session for later reload to re-establish the user session back to where it was before the interruption.

User Navigation Panel: This part of the Inner Shell provides a Main Menu Bar of the necessary common functions and/or options.

SECTION 3 REQUIREMENTS

3.1 OVERVIEW

The problem as stated in Handbook 511, Section 9, "MAINTAINING A COMMON LOOK-AND-FEEL AMONG DIFFERING IETMs", is as follows:

> "While the use of the common browser does standardize many of the user-interaction features, it is very likely that a custom component will contain its own set of unique user-interaction features layered under the higher-level browser toolbars. These features often conform to a proprietary look-and-feel dictated by the COTS product being employed. However, the need for a procurement-guidance document which can be employed to minimize the differences in look-and-feel among various disparate IETM presentation components that operate in the JIA environment still exists. From both the Training and the Job Performance perspective, the effectiveness of each product is enhanced when it is displayed in accordance with a standard style, even if the actual underlying IETM presentation components vary and are proprietary in nature."

This document sets out the procurement requirements for the IDPWG community "look-and-feel" style.

> Handbook 511 - 9.1 Joint DoD/Industry User-Interaction Guidelines "… The guidance contained herein greatly reduces the existing performance requirements to those few that are really needed, and tightens down those few remaining recommendations to be as specific as possible. The intent is that these guidelines eventually replace the user-interaction requirements sections of MIL-PRF-87268, *Manuals, Interactive Electronic Technical: General Content, Style, Format, and User-Interactio*n."

IETM technical manual contract requirements and other procurement instruments may specify that delivered IETM view packages conform to the included look-and-feel user-interface recommendations. By doing so, it will be possible to obtain a meaningful level of common DoD IETM look-and-feel interface without the acquisition of a custom IETM system.

Handbook 511 provides guidelines in chapter 9 for the "look-and-feel" of an IETM and encourages a requirements document be created for a community of interest. This document is the look-and-feel requirements for IDPWG IETMs.

3.2 PHYSICAL IETM SCREEN LAYOUTS - THE INNER SHELL

The Inner Shell is the portion of the IETM, within the browser shell, provided as the client application display area. The only portion of the screen real-estate under the developer's control is the Inner Shell. The Outer Shell is the portion of the screen that surrounds the Inner Shell. The developer should not attempt to modify or control the Outer Shell. As technology

changes, the impact on the Outer Shell is unknown. For example, the Task Force Web Portal and the User Facing Service do not allow the developer the flexibility to control the Outer Shell.
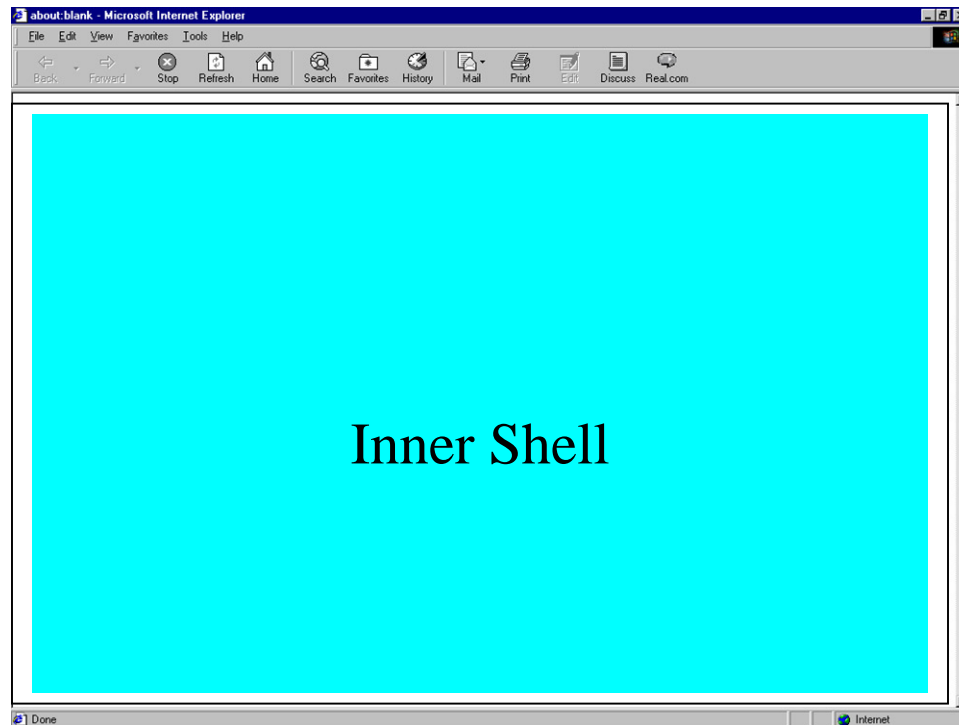

Figure 3.1

3.2.1   General Screen

Handbook 511 - 9.2.4 Control Bars
a. The User Navigation Panel (Tool Bar) should provide the necessary choices/options available at the current time
b. The User Navigation Panel is needed with an optional toggle capability to turn it off.
c. The User Navigation Panel should remain accessible by persistent visible indication.
d. Use the standard icons when applicable in the User Navigation Panel.

Within the Inner Shell is a Guide Post in the upper left hand corner and to the right of the Guide Post is an optional Classification and Navigation Panel. To the left below the Guide Post is a resizable area to display list of contents, list of figures, list of tables, etc as selected in the Guide Post. The Navigation Panel is divided into the Library Navigation Panel and the User Navigation Panel with the order of presentation being the Library Navigation Panel above the User Navigation Panel. The general form is the "inverted L" with the Guide Post in the upper left hand corner. The optional status bar should be located at the bottom of the Inner Shell to the right of the resizable display area. The rest of the Inner Shell will contain the Main Display Screen. See Appendix A for examples of standard Inner Shell layouts.

The Guide Post or compass rose icon should always remain visible. If you need the real-estate and you have an exceptionally rare and unusual case, then the Guide Post or compass rose icon representing the minimized Guide Post should provide the means to restore the User

Navigation Bar. This should be used rarely, if ever. You may not remove the Guide Post under any circumstances. It should always appear on top of everything else.
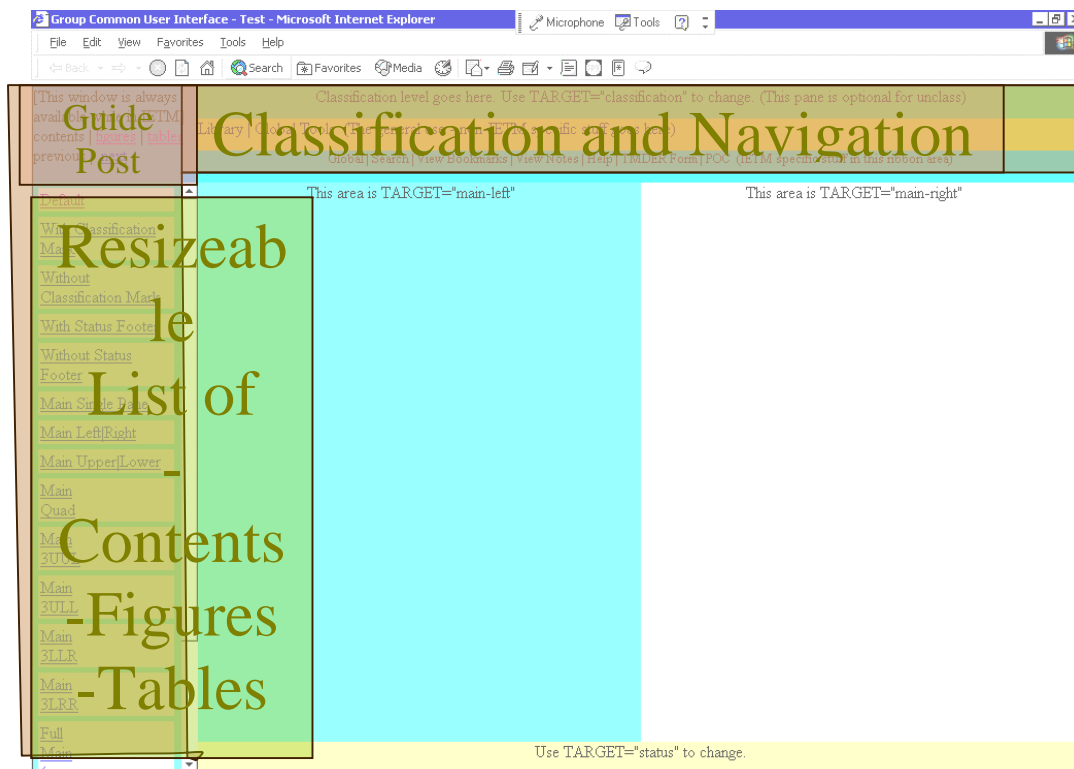
Figure 3.2

3.2.2   Guide Post Functions

This area allows the user to get to and initiate special advanced functions or to return the user to the standard default as described herein. Many of these functions apply to Class 4 and 5 IETMs rather than Class 2 and 3 IETMs. A logo for the Guide Post is optional.

Right mouse clicking on this area will provide the following Guide Post functions menu via a pop-up.

- Reset User Interface to Standard Default? Y/N (mandatory)
  - o If the user interface can be changed, a user should be able to reset the user interface back to the default, defined as the user interface defined upon normal start-up of the IETM for the first time.
- Minimize IETM (optional)
  - o This should cause the IETM to disappear from the screen and indicate an active application on the application tool bar for the operating system.
- Exit IETM - (mandatory)
  - o This should ask the user if they wish to exit the IETM and then if appropriate to save the session.
- Print Screen - (mandatory)

- o   Print what is on the IETM screen.
- Print Page Equivalent - (optional)
  - o   Print the present screen including scrolled off information.
- Change to Page View - (optional)
  - o   Change to a paged view, usually PDF.
- Open New IETM - (optional)
  - o   Open another IETM in a separate window.
- Pause and Save work/location - (optional)
  - o   For those IETMs that can pause, save and resume sessions.
- Resume Saved work/location - (optional but if you can save – you should have a resume)
  - o   For those IETMs that can pause, save and resume sessions.
- Create TMDER (mandatory)
  - o   Create a TMDER/TPDR for the portion of the IETM currently being used.
- View Change Summary (mandatory)
  - o   Allow user to view the change summary.
- Resume – Return back to what you were doing - (mandatory)
  - o   Use the resume if user accidentally brought up the Guide Post and doesn't need to do anything.
- Get to administrative info (mandatory)
  - o   Allow user to view the front matter and other administrative information.
- Abort Browse Mode (optional)
  - o   If browse mode is implemented, allow the user to exit from the browse mode.
- User Navigation Panel (Tool Bar) Toggle (optional)
  - o   Not recommended. An optional toggle capability to turn off the User Navigation Panel. The Guide Post (or compass rose for a minimized Guide Post) and Classification Bar will remain visible.
- Other Custom Functions available to user (these should be listed on the pop-up menu in addition to the mandatory and implemented optional items)
  - o   Any custom functions that the IETM provides should be placed here. This way the user knows how to get to them in a standard way.

3.2.3   Table of Contents

Handbook 511 - 9.2.12 Information Access (Indices, Electronic TOCs, etc.).
      a. A Table/List of all key entry points should be made available for user access.
      b. Access should be provided via a Hierarchical Breakdown such as:
            1. SSSN (MIL-STD-1808)
            2. LCN
            3. AECMA 1000D
            4. Functional and Physical Hierarchy.
      c. Graphical Interfaces are acceptable.

The area on the left side below the Guide Post is the area where the TOC will appear. This area should have a resizable right-side border (so that the TOC area can be reduced in size

to the left). When the user hovers the cursor over a TOC item, the full name of the TOC item will appear.

List of Tables – these are displayed in the display area for the TOC and the original TOC is hidden (or simply not displayed) while the List of Tables is presented.

List of Figures - these are displayed in the display area for the TOC and the original TOC is hidden (or simply not displayed) while the List of Figures is presented.

There has been a lot of work on TOCs by various vendors. One vendor's TOC may load quickly, but be slow to operate, expand, etc. Another's may load very slowly, but be very quick to operate. It is recommended that all the best practices be shared such that all the TOCs will operate optimally.

3.2.4   Previous/Next

Previous/Next in the Guide Post walks through the fully expanded TOC which need not be displayed at the moment in the left hand TOC/Index of areas.   Previous moves you back up the fully expanded TOC and Next moves you down through the fully expanded TOC. It should be noted that the words 'back' and 'forward' refer to the Outer Shell browser functions which may or may not operate as Previous and Next. Here fully expanded TOC means if all levels of the TOC could be displayed.

3.2.5   Standard Icons

When icons are used, they should be the standard icons. In order to view the icons, the following fonts are REQUIRED as the standard install for NMCI/IT-21 deployed systems: monotype sorts, monotype sorts2, webdings, wingdings, wingdings 2, and wingdings 3. See Appendix B for standard icons.

3.2.6   Additional Controls, Tools, User Navigation Bars

The User Navigation Panel provides a Main Menu Bar of the necessary common functions/options. The User Navigation Panel (ribbon bar) should be laid out as follows:

Note 1: Previous, Next, TOC, History, Search, Print, Feedback, Exit, Help core requirements should appear in exactly this order, left justified, on the first ribbon bar. When a function is not available it should be grayed out. This is so users can depend on these items appearing at a standard location in a standard order.
Note 2: Additional controls, if used, are to be placed on the ribbon bar just below the User Navigation Panel core requirements ribbon bar and should be oriented so that icons are right justified.

Note 3: Accompanying icons are optional; however, the text should always be present.

Pop-up menus – the user specifically invokes with right mouse and the information appears at the cursor.   These are highly useful on graphics to provide additional user choices and settings.

The User Navigation Panel can include an option for a user configurable Tool Bar of functions. . However, if used, there should be the ability to reset the tool bar to some default via the 'Return UI to Default' function.

Cascading menus may appear as a child of the first menu item selected. (In a drop-down menu, this appears next to the first menu item selected. In a pop-up, again it appears next to the first menu item selected). There may be several levels of cascading menus.

3.2.7   Screen Sizes

> Handbook 511 - 9.2.11 Screen Resolution and Color Guidelines
> b. Presentation systems should not presume any fixed display resolution, or size.

Proper planning for the size and resolutions of various devices up front in the planning stages makes life-cycle sense as the presentation technology is always undergoing change (e.g., terminals, desktops, laptops, personal digital assistance devices, etc).

3.2.7.1   PC Screen Size

The minimum screen size that the IETM should be authored to operate on a desktop or laptop is 800 wide x 600 high pixels. The user interface region Inner Shell layout templates in Appendix A are to be used.

3.2.7.2   Personal Digital Assistant (PDA) and Pocket PC Screen Size

The present marketplace has 3 different resolutions for the PDA and Pocket PC:

160 x 160 Monochrome and Color   (most vendors support at least in monochrome)
320 x 240   (several vendors supply)
320 x 480   (little vendor support at this writing).

An IETM must be able to be used at these alternative resolutions. The user interface region Inner Shell layout templates in Appendix A are to be used.

3.2.7.3   Electronic Book and Tablet Screen Size

The minimum screen size that the IETM should be authored to operate on an electronic book or tablet is 800 wide x 600 high pixels. The user interface region Inner Shell layout templates in Appendix A are to be used.

3.2.8   Browser Inner Shell Margins

It is recommended that the browser defaults be overridden with the following HTML code:

> <BODY MARGINWIDTH="10" LEFTMARGIN="10" MARGINHEIGHT="15"
> TOPMARGIN="15">

where these values are in pixels.

3.2.8.1   Usable Inner Shell Real-Estate

By using the default margins above of 10 pixels on the left and 15 pixels down, the usable Inner Shell real-estates[1] are:

Screen Resolution	Actual Inner Shell Real-Estate (results may vary)
800 x 600 pixels	717 x 390 pixels with Office Bar
800 x 600 pixels	723 x 390 pixels w/o Office Bar

While the results vary with actual situation, the key point is that the full real-estate of the Inner Shell cannot be utilized at any given time. Browsers also support turning control bars on and off as well as size adjustment of the various browser panes. Therefore, use of the Inner Shell region should consider and be tested with other environmental conditions to ensure reliable end-user functionality.

3.2.8.2   Inner Shell Colors

> Handbook 511 - 9.2.11 Screen Resolution and Color Guidelines.
>   a. Presentation system and graphics developers should consider the use of standard "safe" colors visible across multiple presentation systems.

Design should be for the lowest acceptable color of the worst display device (8-bit color PDAs, cell phones, etc). Today's computers are no longer limited to the 216 safe colors of yesterday. However, prudent design dictates the use of the 8-bit color palette, considering that future use of the IETM may indeed be rendered on a device limited to 8-bits. (See www.lynda.com/hex.html.)

Below is a table that lists the 216 windows colors with their corresponding HEX values and RGB values.   The source for this table is www.lynda.com/hexh.html.

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[1] Adapted from http://hotwired.lycos.com/webmonkey/99/41/index3a_page3.html?tw=design

Figure 3.3

3.3 STYLE AND FORMAT REQUIREMENTS

Handbook 511 - 9.2.1 Display Format (text/font, graphic, table, lists, object embedding)
    a. Use best commercial practices.
    b. Use of multiple frames is not a requirement.

This section covers generalized presentation requirements of an IETM and does not cover specific content issues.

3.3.1   Display Characteristics/Colors

When developing an IETM, developers should use the NMCI TFW Navy Enterprise Applications Guide and MIL-HNBK-511. This IETM developers guide further refines the information within those documents.

3.3.1.1   Text Colors / Background

The text should be black (#000000 or #000033) except as noted elsewhere. Background should be white (#FFFFFF) except as noted elsewhere. This aids printing without loss of content. There may be operational exceptions such as night ops and where color has special meaning. Use of the safe color palette (see Inner Shell Colors in the previous section) avoids surprises upon fielding to 8-bit devices such as PDAs.

The NMCI TFW Navy Enterprise Application Development Guide styles.css stylesheet should be used. IMPORTANT NOTE: The styles.css version Oct 26, 2002 uses unsafe colors in a.hover, body, .currentdirectory, .fileselected, .folderselected, .libraryselected, .librarypath, .lightwash, .mediumwash, .message, .nc2, .toolbar, .wpadvice, .wpcontentlist1, .wpcontentlist2, and .wptreetop. Also, the ie_styles.css version Oct 26,2002 uses unsafe colors in input, select, and textarea.

3.3.1.2   Standard Text/Fonts

Here are the requirements for font standardization of IETMs delivered to the end-user.

Electronic Presentation	Normal Font	Arial
	Minimum Size	Eight (8) points The minimum size for electronic presentation is 8pts. (This is 8 pts). Don't use anything smaller. This is 6pts.
	Fixed Font (if needed)	Courier New
Hardcopy Presentation	Normal Font	Arial or Times New Roman
	Minimum Size	8 points
	Fixed Font (if needed)	Courier New

3.3.1.3   Custom Developed Fonts

There is a real problem if you need a custom developed font under NMCI and TFW. An example is the bar over font frequently used in the Ship Systems Manuals (SSMs) –   AB, BC, etc. It is advised that an alternative representation be used. In the case of bar over, use the ~(AB) for representing the font.

The fonts that the community agrees are needed should be made available as a library of re-useable fonts that any developer can obtain and that are included in the standard deployed NMCI environment.

3.3.2   Security Markings

Whenever classified and distribution information is displayed, an indication of the classification/distribution level is to be indicated at the top of the browser and the Navigation Bar of the Inner Shell. Technical data developed using this specification should have security classification markings in accordance with DOD 5220.22-M and 5200. l-R.

3.3.2.1   On Screen and Printed for Various Data Items including Graphics

The security markings should show on the Title Bar at the top of the browser to remind the user of the classification/distribution. By placing the classification/distribution in the title tags of the XML/HTML, the security markings will show on the Title Bar and will be printed on a page printed from the browser.

Example Code:

<TITLE>[Classification – Distribution – Document Number]</TITLE>
<TITLE>[CONFIDENTIAL –NOFORN – S9SSN-XX-SSM-XX0]</TITLE>

Because graphics can be printed separately from the browser print function, graphics requiring security markings should be stamped with the security markings at the top and bottom of the graphic.

3.3.2.2   Cutting and Pasting Text and Graphics

Carrying the security markings from one document to create another is the responsibility of the individual cutting and pasting the text or graphics. Graphics requiring security markings should be stamped with the security markings at the top and bottom of the graphic.

3.3.2.3   On Screen Security Screen Markings Table for the Navigation Bar

Per SECNAVINST 5510.36 which calls out the GSA Information Security Oversight Office (ISOO) guidelines utilizing the standard 700 series forms (labels) which are presently color coded.   Per Defense Security Service Academy (formerly DOD Security Institute) http://www.dss.mil/search-dir/isec/change_ch8.htm the standard colors are "orange for Top Secret, red for Secret, blue for Confidential and green for unclassified" which agrees with the 700 series color coding.   (Exception can be made if a colored binder exists for the hardcopy version of the legacy technical manual , then the Classification Bar shall be colored to mimic the colored binder.) This is summarized here:
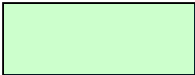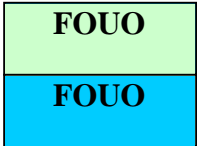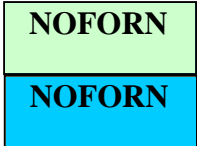
FORM #	TITLE	Color	Example/Hex Color
SF 706	TOP SECRET label	Orange	**Hex Code #FF9900**
SF 707	SECRET label	Red	**Hex Code #FF0000**
SF 708	CONFIDENTIAL label	Blue	Hex Code #33FFFF
SF 710	UNCLASSIFIED label	Green	Hex Code #00CC00

Security screen markings will be shown in the bar across top of the "body" area to remind the user of classification/distribution. The table below provides the marking requirements.

	CLASSIFICATION BAR (located just below NAV utilities bar in the top of the screen)	COLOR AND MARKING FOR SECURITY MARKING BAR
Unclassified	Text: No text unless distribution markings are required. **Light-Green** background.	Color Code for Block: #00CC00
FOUO "For Official Use Only" FOUO is a distribution restriction and can apply to Unclassified and Classified data	Text: "FOUO" center in the middle of the screen with a **Light-Green** or **Light-Blue** background or hyphenated with the classification such as "CONFIDENTIAL-FOUO"	**FOUO** **FOUO**
Confidential	Text: "CONFIDENTIAL" center in the middle of the screen with a **Light- Green** background	CONFIDENTIAL Color Code for Block: #33FFFF
NOFORN NOFORN is a distribution restriction and can apply to Unclassified and Classified data	Text: "NOFORN" center in the middle of the screen with a **Light-Green** or **Light-Blue** background or hyphenated with the classification such as "CONFIDENTIAL-NOFORN"	**NOFORN** **NOFORN**

Secret	Text: "SECRET" in white center in the middle of the screen with a red background	SECRET Color Code for Block: # FF0000
Top Secret	Text: "TOP SECRET" in White center in the middle of the screen with Orange background	TOP SECRET Color Code for Block: # FF9900

3.3.3 Front and Rear Matter

Front matter consists of the material preceding the first chapter, and rear matter consists of the material that follows the body. Rear matter consists of material following the last chapter. The specific front and rear matter requirements are based on the technical manual contract requirements.

3.3.3.1 Paper Domain Only

The following is the front matter order of presentation for typical technical manual contract requirements:

- Title Page
- List of Effective Pages
- Notice to Users
- Manual Change Request
- Manual Change Form
- Instruction to Manual Holders
- Certification Sheet
- Approval and Procurement Record Pages
- Technical Manual Validation Certificate
- Record of Advanced Change Notices
- Record of Changes
- Master Index
- Foreword
- Preface
- Introduction
- Table of Contents
- List of Tables
- List of Illustrations
- List of Appendices
- Safety Summary

3.3.3.2   IETM Domain Only

Components of the front and rear matter that are typically not part of the Table of Contents in the paper domain should be accessible from the IETM Table of Contents or User Navigation Panel. Because the IETM is not page-formatted and contains no page numbers, the List of Effective Pages and the replacement page instructions in the Instructions to Manual Holders are not required. A "What's New" component should be established from a link on the User Navigation Panel to provide information with links to where data has changed, and to describe IETM functional and cosmetic feature changes.

3.3.3.3   Both

When required to support both hard copy and IETM domains, the developer's publishing translators should process the different deliverable formats from the same SGML/XML source data.

3.3.4   Body

Most linearly scrolling IETMs will use the following Inner Shell layout for most of the presentation with much of the material in-line. The Highly Interactive IETM should use either the single or left/right or the upper/lower display configuration most of the time. The Inner Shell should not exceed four panes. See Appendix A for examples.

3.3.4.1   Change Summaries and Markings

Change summaries are required and can be accessed via the TOC. For contents of what is in the change summary see Appendix C, Technical Data Set Change Handling. For cleanup of the change summary itself, a revision may contain a summary of the previous change summary itself rather than a fact-by-fact account of the changes.

The user should have the option to view change markings. An option should be provided in the User Navigation Panel to allow the user to view the change markings with the default set to NO so that change markings are not displayed unless the user requests them.

Below is a general overview of change markings. See Appendix C, Technical Data Set Change Handling, for full details.

- Change markings to add new elements should mark the element with italics and the color red so that it is easily distinguishable both on-screen and printed. New elements (e.g., paragraphs, tables, steps, list items, figures - figure title gets marked) are numbered in accordance with MIL-DTL-24784. A new item between 1.2 and 1.3 becomes 1.2A. Change bars are not needed on screen but may be added in the printed copy. Example: *1.2A New Para Title.   This is new.   This is new.*
- Change markings to add new information within an element, such as new text, should be marked with italics and the color red. Change bars may be added in the printed copy. Example: This is unchanged. *This is changed.* This is unchanged.

- Change markings for deleted numbered elements (e.g., paragraphs, tables, steps, list items, figures, etc.) have the word (Deleted) printed in italics and the color red next to the number of the element deleted. Change bars may be added in the printed copy. Example: *1.2 (Deleted)*
- Change markings for deleted text within an element replaces the deleted text with three red asterisks. Change bars may be added in the printed copy. Example: This is unchanged. ***** This is unchanged.

Handbook 511 - 9.2.24 Rapid Action Changes and Critical Safety Interim Messages.

a. A visual indication of the existence of a critical change should be displayed in context.

b. A single user interaction should be available to access the change.

c. The user should be provided with a visual indication for critical messages at the start of the IETM.

Appendix C also provides full details on handling Rapid Action Changes (RACs) and Advanced Change Notices (ACNs).

3.3.4.2   Lists

Use technical manual contractual requirements to govern the appearance of lists.

3.3.4.3   Steps/Procedural

For check-off lists, use check boxes between the step number and the text.

1.   ☑   This is a step.

When the IETM presents technical material in a screen-by-screen fashion (rather than as a scrolling screen), place as many steps as can fill the screen. Screen stacking (e.g., several open windows) should not be used to present multiple steps. Note: Steps appearing one at a time is very time consuming.

A left step with right-hand illustration or an upper step with lower illustration is preferred. If more panes are needed for illustration, keep the number of panes to three or four. When this is not feasible (such as a scrolling screen), place the graphic in-line or place a camera icon in-line so that the illustration can be displayed in another window (out-line). See Appendix A for examples.

3.3.4.4   Hot Spots/Links

Handbook 511 - 9.2.3 Link Behavior/Navigation

a. Persistent visual indication of link(s) to additional information should be available.

b. There should be a visual indication of how the link behaves (e.g., goto, gosub, relational).

c. If you are executing a link that is not a goto or exit link, you should be able to return to the link source from the link destination.

Handbook 511 - 9.2.6 Selectable Elements (Hotspots)
       a. All hotspots should be visually indicated
       b. There should be an indication of link destination (target) when the cursor passes over the hotspot.
       c. There are three acceptable modes of visual indication of hotspots (selectable areas).
              1. Persistent visual indication that an area is hot.
              2. Cursor changing shape/color.
              3. Object changes while cursor over area (e.g., IPB callout expands).

When highlighting text for selectable elements (hotspots), either use color changes or increase background intensity. Use the standard web practice for text (that is, blue underlined initially and turning purple underlined after the link is followed).

Hotspots in graphics should be non-persistent in their display. For non-textual hotspots, change the cursor to cross-hairs (⊕) when the hotspot is moused over.

Links to ATIS should be displayed using the one-click standard web practice of text that is blue underlined initially and turns purple underlined after the link is followed. The link is external to the current document collection and should be identified as an ATIS link. The link would usually be via the reference list to items (e.g., 'reference 22-TMINS XXX-XXXX-XXXX') or in the body of the text to items (e.g., 'See reference 22'). If the ATIS link is in the body, a hover-over should identify it as an ATIS external link. The hover-over indicates that an ATIS link with information about the TM, such as 'ATIS link to TMINS XXX-XXXX-XXXX, Volume 4, Part 3, Chapter 2'. If the hotspot is in the reference list where the TMINS or drawing number is already listed, the hover-over field may indicate 'ATIS link'.

To view figures, foldouts, or tables, when not in-line, use one click standard web practice of text that is blue underlined initially and turns purple underlined after the link is followed. References to in-line objects would bring up the graphic in a separate panning/zooming window effectively allowing it to be viewed out-line. Out-line graphics and tables are viewed in a separate window. Clicking on a graphic to be presented out-line should present the graphic and not send the user to a list of graphics requiring a second mouse click. Reference lists also follow standard web practices. Generally speaking, buttons are not really needed and therefore are optional. Buttons would most likely be used in place of the in-line graphic for large HTML files with many graphics to speed up initial loading. TOC links should all be one click.

Links to view animations, videos, etc. should use one-click standard web practices of text that is blue underlined initially and turns purple underlined after the link is followed. As with tables and figures, the links should include type, number, and title (e.g., 'See Video 7-3, Disassembly Procedures'). Icons may also be used for non-text references. For standardized icons, see Appendix B, Standard Icons and Symbols.

3.3.4.5   Dangers, Warnings, Cautions, and Notes

Handbook 511 - 9.2.7 Warnings, Cautions, Notes. d. Standard colors for alerts: Red – Warning, Yellow – Caution, Cyan – Note.	

In the past, warning has been used to denote what is now considered danger and warning. Dangers, warning, cautions, and notes are defined in ANSI Z535.3. Here, a red border is used for both danger and warning. Also, if the requirement is to be ANSI Z535.3 compliant, there is no guarantee that a printout will be readable, due to the choice of background colors.

Here are the 8-bit safe colors to be used for Dangers, Warnings, Cautions, and Notes:

Red	FF0000 or FF0033
Yellow	FFFF00 or FFFF33 or FFFF66
Light Blue	66FFFF or 33FFFF or 00FFFF
Black	000000 or 000033
White	FFFFFF

DANGER	The danger marking is used to indicate a location, equipment, system, or the ship where imminent hazard exists capable of producing immediate injury or death to personnel or threatens the primary mission of the ship. The symbol used for danger has the word danger in white text inside a red rectangle box with an optional MIL-STD-1222 hazard icon graphic below and the words 'This is a danger' with all appearing within a larger white box with a red border. This is a Danger. *Optional*
WARNING	The warning marking is used to indicate a location, equipment, system, or the ship where a potential hazard exists capable of producing injury to personnel if approved procedures are not followed. The symbol used for warning has the word warning in white text inside a red rectangle box with an optional MIL-STD-1222 hazard icon graphic below within a larger white box with a red border. This is a Warning. *Optional*

CAUTION	The caution marking is used to indicate where a hazard exists that could severely damage equipment, system, or the ship causing loss of mission capability if approved procedures are not followed. The symbol used for caution has the word caution in black text inside a yellow rectangle box with an optional MIL-STD-1222 hazard icon graphic below all appearing within a larger white box with a yellow border. *Optional* **CAUTION** This is a Caution.
NOTE	The note marking is used to indicate a special piece of information. The symbol used for note has the word note in blue text inside a white rectangle box and larger white box with a blue border. It was suggested to make the note marking similar to the danger, warning, and caution that the word note should be in white text inside a blue rectangle box. *Optional* **NOTE** This is a Note.

3.3.4.5.1   Pop-up Dangers, Warnings, Cautions and Notes (If Used)

Handbook 511 - 9.2.7 Warnings, Cautions, Notes.
    a. User should acknowledge pop up warnings and cautions before proceeding.
    b. Pop up alerts should be centered on the screen.
    c. A persistent icon should appear on the screen when alert is applicable.

Pop-up Dangers, Warnings, Cautions, and Notes appear similar to a pop-up menu with an OK button in the center of the user viewing area to alert the user of a specific condition. (These are thus out-line rather than in-line). Some systems display all applicable pop-ups as stacked window frames where the user acknowledges each one individually. In either case, the user should be able to again see the pop-up(s) after they are acknowledged by clicking on the applicable icon in the status footer.

For systems which allow minimized appearance of a pop-up Dangers, Warnings, Cautions, and Notes (as opposed to those that are in-line), the status footer bar at the bottom of the screen will appear and display the appropriate icon as shown below:

Minimized Danger Icon Danger(s) Apply	ICON: Red Triangle with "D"	D (red triangle)
Minimized Warning Icon Warning(s) Apply	ICON: Red Triangle with "W"	W (red triangle)
Minimized Caution Icon Caution(s) Apply	ICON: Orange Triangle with "C"	C (orange triangle)
Minimized Note Icon Note(s) Apply	ICON: Circle with "I" in middle	ⓘ

3.3.4.5.2   Hazardous Material Icons (if used)

Hazardous Material icons are optional. However, it they are used, they should be in accordance with ISO 3864 "**Safety colours and safety signs . Part 2: Safety signs in workplaces and public areas - Overview of standardised safety signs".** A draft can be found at: (http://www.unece.org/trans/doc/2001/ac10c4/ST-SG-AC10-C4-2001-30a2e.pdf).

Hovering the mouse over the icon will pop-up the meaning of a hazardous material icon.

3.3.4.6   Tables

The following contains the requirements for tables appearing within the body of the IETM (in-line), and those appearing in their own separate window (out-line).

TABLES – GENERAL (mandatory)	Access	View with one click. (That is, without an intermediate stop).
	Appearance	May view as in-line or out-line table View with standard web practices Adherence to MIL-DTL-24784 standard for appearance
	References	TOC links should all be one click directly to table Links in the body or table to tables should be normal hypertext Example: See Table 3.5 Icon: (Optional) Black Square surrounded by 2 additional Squares ▣ (wingdings 2, #170). Example: See ▣ Table 3.5
TABLE HEADERS (if	Appearance	The header should not scroll away when rows are scrolled.
	Background	No gray background, other colors optional (printing issue)

used)	Font	**Bold** and/or larger fonts optional
	Border	Borders should be same size lines as rest of table
	Font	Same font as body is preferred
TABLE CELLS (mandatory)	Font	For compression, cell fonts may be smaller but must be controlled by style sheet
	Background	White background, other colors optional but consider printing impact
	Border	Borders should be single or double lines Note: Small tabular text may have no lines, if controlled by style sheet
	References	Footer Reference: Optional link from cell to the bottom applicable footer Example: See Footnote 1 Below Hyperlink from table cell should just be the reference text only not the entire cell. Each hyperlink, where there are more than one, within a cell should be individually accessible.
TABLE FOOTERS (if used)	Border	Borders should be same size lines as rest of table
	Appearance	Static line at the bottom of the table (separate frame optional)
	Background	Background: No gray background, other colors optional (printing issue)
	Font	Font: **Bold** and/or smaller fonts optional Example: **Footnote 1 This is an example (I'm linked as a destination from a cell(s) in the main table)**
	References	Table Reference: Table cell destinations may optionally scroll to the destination row of hyperlink

3.3.4.6.1   Large/Complex (TOC-worthy) Tables

Large multicolumn tables should have as a minimum a static fixed header. The header should not scroll away when rows are scrolled.

3.3.4.6.2   Small (both TOC and non-TOC-worthy) Tables

Small tabular text may have no lines, if controlled by style sheet.

3.3.4.7   Graphics

The following contains the requirements for graphics appearing within the body of the IETM (in-line).

3.3.4.7.1   Illustrated Parts Breakdown (IPB)

Illustrated Parts Breakdowns (IPBs) can be displayed using the entire Inner Shell while retaining the Guide Post. Hovering over a part should provide its nomenclature. Right-mouse-clicking should display a menu of options to include related remove/replace/repair procedures, part ordering, training, etc. The IPB should be linked to the parts list, and the parts list should be linked to the IPB.

3.3.4.7.2   Troubleshooting Diagrams

Troubleshooting diagrams should use available NMCI/IT-21 plug-ins for the display to the user via a browser. No special plug-in should be required for the presentation of the troubleshooting information. The recommended formats are webCGM and SVG (neither is currently on the NMCI/IT-21 standard plug-in list); however, legacy systems may continue to use JPEG and BMP as appropriate because these are native to the browser. Display of TIFF and CALS Raster requires a qualified NMCI/IT-21 plug-in (which is not available at this time). Animation of sequences is available by using MacroMedia Flash.

For performing flow-tracing during troubleshooting, the IETM should provide the ability for the user to change the highlight color of the flow trace. (Example: Change the flow tracing color for different piping systems.) Optionally, the IETM may dynamically generate a subset of the schematic/flow for a connection of interest from data (a.k.a. "wire-on-the-fly").

For complex troubleshooting scenarios, use a three or four pane approach as shown in Appendix A. For less complex scenarios, consider a two pane (left/right, top/bottom) approach with the left or top pane providing the procedure to be followed and the right or bottom pane illustrating what the user is expecting to see or requesting user input.

3.3.4.7.3   TM Illustrations (Traditional Line-Art)

Handbook 511 - 9.2.16 Graphics.
a. Developers should use best commercial practices for graphics format and display.
b. Preferred vector graphics standard: CGM - WebCGM Type 4 Profile (which is moving towards an ISO Std.).

Vector formats are preferred for all new 2-D drawings, schematics, and illustrations and should be either Computer Graphic Metafile (CGM), delivered in accordance with the international specification, ISO/IEC 8632, and the implementation profile specified by **WebCGM** recommendation, (**http://www.w3.org/Graphics/WebCGM** REC-WebCGM-19990121 or Scalable Vector Graphics (SVG) delivered in accordance with Recommendation 1.0 of the World Wide

Web Consortium (W3C) (**http://www.w3.org/TR/2001/REC-SVG-20010904/**)[2]. SVG is preferred for vector graphics requiring animation or gradients.

If multiple graphics support one step, they should appear simultaneously as the available display real-estate allows. Graphics should provide sufficient detail to uniquely identify all maintenance parts including fasteners and consumables associated with the step. The ability to select a portion of a graphic with mouse movement and paste it into another document is optional. The IETM presentation system should provide the user with the ability to view graphic objects with pan, zoom, expand, and magnify.

While generally discouraged for new acquisition, legacy 2-D drawings, schematics, and illustrations may use raster images (e.g., TIFF, BMP, GIF, JPEG) for the simple capture of existing drawings not already in an acceptable vector format.

Raster graphics should not be used in:

1)   where there is a requirement for navigation (hot-spotting, hyper-linking) within the image,
2)   where there is a requirement to attach metadata or added information to text or graphic elements within the image.

Legacy applications may continue to use MIL-PRF-28002C, Raster Graphics Representation in Binary Format, 30 September 1997, Types 1, 3, and 4. Type 2, the ODA/ODIF format (CALS Type 2) included within MIL-PRF-28002, should not be used. For more information refer to the DON Data Acquisition Guide.

The C4 format (CALS Type 4) is the preferred legacy format for raster engineering drawings within JEDMICS and ATIS (Advanced Technical Information Support). The NIFF format is also acceptable for drawings and schematics.

3.3.4.7.4   In-Line / Out-Line

There are pros and cons to using in-line or out-line strategies for displaying graphics. Displaying all graphics as in-line maintains the feel of a scrolling document for viewing and printing. However, the viewability of the graphic may be compromised, unless pan/zoom is provided. Alternatively, displaying graphics as out-line allows the source to load much quicker and brings up the graphic in another window that can be toggled. The drawback is on the printing side. Unless code is written to pull in the graphics when a section is printed, they will usually be printed en masse at the end.

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[2] NOTE: Programs with existing investment in CGM/webCGM data need not change to SVG. Both SVG and CGM/webCGM data can reside in the same data base management system (DBMS). The size of the existing CGM/webCGM repository investments in authoring and publishing tools may justify continued acquisition of CGM/webCGM graphics. Furthermore, CGM/webCGM can be transformed into SVG with relative ease and newer CGM/webCGM tools can create SVG from CGM/webCGM on the fly for delivery to the web.

For these reasons, a compromise is recommended. Graphics should initially be displayed in-line, mainly to support printing. When the graphic is selected, then another window should open with pan/zoom controls, etc.

3.3.4.7.5   Foldouts

By their sheer size, foldouts are difficult to handle within the IETM. Depending on individual program requirements, developers may have to provide hard copy foldouts, in addition to whatever is supplied with the IETM, to supplement their product.

3.3.5   Multimedia and Other Items/Functions

The use of multimedia in IETMs marks the great distinction between a traditional hard copy manual and a modern IETM. The information conveyed through multimedia greatly enhances the presentation of the subject matter and increases the retention of the material by the user. Multimedia includes audio, graphics, video, and animation.

The textual information for procedures, instructions, or steps should not be replaced by multimedia. Audio, video clips, and animations will not be played automatically. Audio, video clips and animations will be manually started by pressing "play" on a standard Windows Media Player or QuickTime Movie and Audio Viewer control panel. Developers need to ensure that the user can use the multimedia format being delivered. The current NMCI multimedia players and plug-ins are RealNetworks RealPlayer 8, Microsoft Windows Media Player v7.01, MacroMedia Shockwave v 8.0, MacroMedia Flash Player 5.0, Apple QuickTime Movie, and Audio Viewer v 5.0, and Internet Pictures IPIX v6,2,0,5.

Media	File Type	MIME	Microsoft Media Player v7.01	Apple QuickTime Movie and Audio Viewer v 5.0
Audio	Windows Media Audio files	wma, and wax	X	
Audio	audio files	wav	X	X
Audio	MIDI files	mid and midi	X	X
Audio	MIDI files	rmi	X	
Audio	MIDI files	smf and kar		X
Audio	AIFF Format sound	.aif, aifc, and aiff	X	X
Audio	AIFF Format sound	cdda		X
Audio	AU Format sound	au and snd	X	X
Audio	ULaw files	ulw		X
Audio	CD audio track	cda	X	
MP3	MP3 format sound files	mp3 and m3u	X	X

MP3	MP3 format sound files	swa and m3url		X
Graphics	BMP image file	bmp		X
Graphics	TIFF image	tif, tiff		X
Video	Windows Media files	asf, asx, wm, wmx, and wmp	X	
Video	Windows Media audio/video files	Wmv and wvx	X	
Video	video files	avi	X	
Video	video files	mov, qt, smi, sml, smil, vfw, flc, and fli		X
MPEG	movie files (MPEG)	mpeg, mpg, mpe, m1v, mp2, mp2v, and mpa	X	X
MPEG	movie files (MPEG)	mp4, mpg4		X
Streaming Movies	streaming movie files	sdp, rtsp, and rts		X
Digital video	Digital video file	dv, dif		X
Animation	Flash file	swf		X

3.3.5.1   CODECS

The following subsections provide an explanation of the common codecs.

3.3.5.1.1   Windows Media File

These are the new Microsoft file formats to be streamed over the Internet, a computer, or network. An Advanced Streaming Format (ASF) file can contain video, audio, slide shows, and synchronized events. Windows Media Audio (WMA) contains audio. Windows Media file with Audio/Video (WMV) is the same as the ASF, except that it can be downloaded instead of streamed from a server far away.

3.3.5.1.2   Moving Pictures Experts Group

These files are a series of evolving Video/Audio standards:

- MPEG-1: A video standard (quality slightly worse than VHS) widely used Video-CD and CD-I media.

- MPEG Audio Layer-3 (MP3): This audio compression technology is capable of compressing CD-quality audio by a factor of 12 with almost no quality loss. MPEG Audio Layer-1 and MPEG Audio Layer-2 are the previous versions of MP3.

- MPEG-2: This video standard (very high quality) is used on DVD discs and digital TV broadcasts.

- MPEG-4: This is a new version of the previous MPEG standards. It is designed for streaming of multimedia data over a wide range of bit rates.

3.3.5.1.3   RealAudio/RealVideo File

RealAudio/RealVideo (.rm,.ra, and .ram files) is the current alternative to Microsoft Windows Media file formats and is utilized for streaming live or pre-recorded contents over the Internet. However it is also possible to play a RealAudio or RealVideo file directly from a computer or network. The RealPlayer must be installed on the computer to be able to play RealAudio/RealVideo files.

3.3.5.1.4   QuickTime File

These are files for the Apple rich media player, which supports a wide range of formats (Indeo, MP3, H.263, H.262, Sorenson Video 1 and 2, Cinepak, etc.). MOV and QT is the exact same file format; however, MOV is the most used format today. There is also two more file formats used in conjunction with the Apple QuickTime player: QTX and QTR. These are expansion modules for the player itself, much like windows codecs are contained in DLL files. These files are like the Macintosh DLL format.

3.3.5.1.5   Audio/Video Interleave File

The AVI file is defined by Microsoft and is the most widely used audio/video format on Windows platforms. However, it is not at all the easiest file to play. It is not compressed with one specific codec; rather, it is a file that can be compressed (or completely uncompressed) with any one of hundreds of codecs (examples: DivX, MPEG-4v2, Indeo 3.2, I263, Cinepak, etc.).

3.3.5.2   Audio

Recent audio compression algorithms allow for acceptable audio quality using much smaller file sizes. The decision as to which CODEC to use should be based on compatibility with Windows Media Player, QuickTime Movie, and Audio Viewer, and obtaining acceptable audio quality with the smallest possible file size. WAV files for all audio should be avoided because of file sizes that require significant bandwidth when run over a computer network.

Provide no Audio for Classified Information.

3.3.5.2.1   Sound

Handbook 511 - 9.2.14 Sound.
     a. Developers should use best commercial practices when implementing sound.
     b. The user should take action to hear the sound. (No automatic playing of sound.)
     c. User controls muting and volume via system controls (versus embedded controls within the application). Optional: Application can provide convenient access to the system controls.

In general, controls are provided within the control or operating system for audio. The following are the preferred controls:

CONTROL	ICON	LOCATION/EXAMPLE
Access Volume Controls	Speaker Such as: ◀	Usually by the operating system in a system control panel
Volume Up	Icon: ◢	
Volume Down	Icon: ◣	
Mute	Icon: ⊘	
Play	Icon: ▷	
Stop	Icon: □	

3.3.5.2.2   Voice I/O

Handbook 511 - 9.2.15 Voice Input/Output (I/O).
     a. Voice I/O should be used only as supplemental input/output and navigation.
     b. Keyboard and pointing devices should be the primary input, and visual display should be the primary output.

	ICON	LOCATION
Turn on Voice Input Recognition	Text: Voice Recog On Icon: ͡ 👂	Optional-Local Nav Util Bar if it can be used immediately in-context. Otherwise it is a general capability – it should be an optional enhancement that can be accessed through the Guide Post.
Turn Off Voice Recog.	Text: Voice Recog Off Icon: ⊘	Optional-Local Nav Util Bar
Voice Recog On Indicator	Text: Voice Recog On Icon: ͡ 👂	Status Footer

Turn on Voice Output	Text: "Text with Voice" Icon: Head with words coming out Such as: 🗣 Or 🗣 Text with Voice	Optional-Local Nav Util Bar if it can be used immediately in-context. Otherwise it is a general capability – it should be an optional enhancement that can be accessed through the Guide Post.
Turn Off Voice Out.	Head with words coming out with a circle-slash Such as: 🚫🗣	Optional-Local Nav Util Bar
Voice Output On Indicator	Text: N/A Icon: Head with words coming out Such as: 🗣	Status Footer

3.3.5.3   Graphics (Photos, etc – other than Traditional Line-Art)

Use graphic formats that are native to the browser, such as JPEG or GIF. The JPEG format is preferred for half-tone images and photographs. For print purposes, provide 150 or 300 dpi resolution.

The acceptable formats are:

- Adobe PDF
- BMP (BitMap)
- GIF (Graphic Interchange Format)
- JPEG (Joint Photographic Experts Group)
- TIFF (Tiled Image File Format)

3.3.5.4   Video

Recent streaming video and video compression algorithms allow for acceptable video quality by using much smaller file sizes. Video files that are compatible with Windows Media Player and QuickTime Movie and Audio Viewer should be used. Streaming video, such as ASF and WMV and MPEG, are preferred over MOV and AVI. AVI files for all video should be avoided because of file sizes that required a significant amount of bandwidth when run over a computer network.

3.4 USER INTERFACE

This section covers the user interface requirements of an IETM regarding administrative information, repurposing of IETM information, interactivity with an IETM, and searching within an IETM.

3.4.1   Administration

Administration of the IETM content requires a consistent approach to reduce confusion to the end user.

3.4.1.1   Metadata/Administrative Information

Handbook 511 - 9.2.22 Administrative Information (e.g., effectivity, authorization, distribution, validation/verification). Administrative information should be displayable.

Source 87268 Spec paragraph: 3.2.1.1

Administrative information. All IETMs shall contain the following administrative information for subsequent user selectable display:

a. Identification of the technical manual title, assigned technical manual number, and document version, as applicable

b. Classification level of the IETM (shall also be presented upon initial entry to the IETM by the user)

c. Date, baseline date plus date of latest and all previous changes, if applicable

d. Verification, change, or revision status, as applicable

e. Preparing activity

f. Activity with technical control of the IETM

g. Activity responsible for configuration management of the equipment/system

h. Address for forwarding deficiency reports or other evaluative comments

i. Method of obtaining additional copies and the format of those electronic copies

j. Distribution statement

k. Export control notice, if applicable

l. Summary of documents and/or technical manuals that are referenced in the IETM but not included in the automatically accessible data available to the IETM at the time it is used, if applicable

m. General notes describing the physical method for identifying the specific equipment to which this IETM applies, the method for identifying the change configuration status of equipment when not immediately obvious to a qualified user, and the relationship of the IETM to the particular equipment under maintenance

Access to all of the above items, required in all Navy IETMs, shall be provided through menu selection via a menu bar which is displayed when the IETM is first accessed; i.e., when the log-on is first acknowledged by the IETM. If the IETM is classified, the overall classification level of the IETM must be shown to the user. A recommended practice would have the window initially accessed show the overall classification level of a classified IETM.

Administrative information has always been a required part of technical information. Handbook 511 indicates that it should be displayable. MIL-PRF-87268A indicates the kind of information to be covered.

NOTE: There is presently a draft of the metadata which encompasses the administrative information for the Technical Data Knowledge Management (TDKM) project.

Administrative Information should be available during the use of the IETM via the "Guide Post" area, which is selected by clicking on the upper left hand corner. This will then provide a mandatory function so that the user is able to access the administrative information.

Classification level of the highest level should be shown for specific content chunk (e.g., if screen-by-screen then the chunk is a screen; if scrollable-file-by-scrollable-file, then the chunk is the scrollable-file), displayed at the top of the client area above the navigation bar.

3.4.1.2   Technical Manual Deficiency/Evaluation Reports (TMDERs)

Handbook 511 - 9.2.21 Feedback to Originator (e.g., TMDRS, Form-2028, AFTO 22).
        a. A single user interaction should be available to select the function. (e.g., a button, double mouse click).
        b. The preferred user interface is a form.
        c. The system should provide an output compatible with the user environment.
        d. There should be a "Form fill-in completed" function before returning to the IETM (e.g., "submit," "done," "okay," "close-out".)
        e. The system should automatically generate an electronic locator (e.g., address, version) and to the greatest extent possible, relevant fields on the form should be automatically filled-in (e.g., user ID, system state, etc.).

To invoke the TMDER, right mouse on the upper left corner Guide Post area and select "Submit TMDER" from the pop-up menu.

ACTION	ICON	LOCATION
Submit TMDER	☞Submit TMDER	Guide Post-Right Mouse Pop-up Menu NOTE: Fires off another Out-Line Window with the fill-in form that can be moved by the user in order to reference the ETM on which the TMDER is being submitted.
Form Complete-Submit	Button with Text: '**Submit TMDER**'	Bottom of Form in the Out-Line Window. If the system is not online, then the system should save the TMDER for later upload to the appropriate system when connected.
Form Cancel	Button with Text: '**Reset/Clear Form**'	Bottom of Form in the Out-Line Window. User can simply close the Out-Line Window containing the TMDER Form
Form Print	Button with Text: '**Print Form**'	Bottom of Form in the Out-Line Window

Technical Manual Deficiency/Evaluation Report (TMDER) Form

Please use this form to indicate deficiencies, problems, and recommendations relating to publication.
For attachments to this TMDER, please attach them to an e-mail to tmder@phdnswc.navy.mil. Be sure to identify the Publication number and the Report Control Number.
Note: Do not use for classified TMDERS.

For further information on this TMDER form, contact TMDER Support (NSDSA Team 1 - TDMIS/TMDERS/ACN) or e-mail: TMDER support

*** *You must enter RECOMMENDED CHANGES TO PUBLICATION information before clicking the `Submit TMDER` button, or your TMDER submission may be disposed of* ***

Publication No.	Revision Number	Revision Date	TM Change	Change Date
SE600-BB-GYD-010	03	11171858		

Title	Report Control Number format is (UIC code)-YY-XXXX
SOFTWARE USERS MANUAL FOR THE DOS/WIN ATIS VERSION 4.2	-02

Recommended Changes to Publication

Page No.	Paragraph	Recommended Changes and Reasons

Figure 3.4

Originator Information

UIC	Name (First Initial, Last Name)	Work Center

E-mail Address	DSN	COMM No	Date
		Ext:	11/25/2002

Station/Hull UIC	Hull No.	Station Address

City	State	Zip
		-

Submit TMDER   Reset/Clear Form
Print View

NSDSA Tools:	TM Print Collation Run Estimator	TM Printing Cost Estimator	Reading Grade Level Utility		
Preferred Product List	The Anchor Desk	Sailor to Engineer	Official Navy Site	Navy Jobs	NAVSEA

This is an official U.S. Navy Web Site.

Read important conditions, restrictions, and disclaimers.

Read the privacy and security statement.

Feedback, Comments and Questions.

Figure 3.5

3.4.1.3   IETM Specific Browser Help

IETM Specific Browser Help is in addition to the standard browser help and is a method for providing training on IETM features and functions.   The IETM Specific Browser Help should provide TMMA contacts, glossary of terms, a description of IETM features, and how to use each function.

3.4.1.4   Versioning

It is recommended that Appendix C on change management be consulted. The following is excerpted from the appendix.

The following are types of changes that require versioning:

Revision – A revision occurs when more than 25% of the technical content changes and incorporates the new data and previous changes.

Re-Issue - Similar to a Revision but at the Change Level. A method of "cleaning-up" a data set that has received many changes over its life-cycle

Change – something in the technical data package has changed. Not enough to trigger a revision.

Changes can be marked in the SGML/XML with the following attributes:

Attribute	Explanation	Values
Chnglevel	Change Level for Change to be distributed	Blank (or "0"), "1", "2", "3"... NOTE: Translation determines alpha or numeric on output
Chngtype	Type change whether inserting or deleting	"add" or "delete"

Example of changes of word(s) within an element at various change levels:

Chnglevel	"delete"	"add"	Output
0			Look at the spoon
1	~~Spoon~~		Look at the ***
2		Moon	Look at the *moon*
3	~~Moon~~	Loon	Look at the *loon*

Example of changes of paragraphs or steps,or list item within an section at various change levels:

Chnglevel	"delete"	"add"	Output
0			Look at the spoon. Look at the lagoon.
1	1. Look at the spoon		*[Deleted]* Look at the lagoon.
2		Look at the moon	*Look at the moon* Look at the lagoon.
3	Look at the moon	Look at the loon	*Look at the loon* Look at the lagoon.

3.4.2   Re-purposing Data and Hardcopy Output

The data within the IETM should be presented to allow re-purposing or sharing. Other logistics products, such as training and work packages, capture or reference IETM data either in whole or at sublevels. The capability should exist to allow the data to be printed, referenced through hyperlinks, and transferred to another product by saving and "cutting and pasting."

3.4.2.1   IETM Printing

Handbook 511 - 9.2.19 Printer Output.
    a. Printed output is strongly discouraged.
    b. Print capability should be used primarily for graphics.
    c. All printer output should have version number and/or printed date/time stamp.
    d. When customer needs printed output:
        1. Printer output should not have to conform to normal paper TM specifications
        2. Satisfactory Options:
            (a) "Pre-composed" files (such as Adobe PDF) can be attached.
            (b) "On-the-fly" composition for printing (of logical element) built into the viewing application.
            (c) Screen print. Preferred method: print data content of active window only.

IETM printing may involve printing the complete manual or a section, such as a paragraph, table, or graphic. Printing the entire manual is discouraged unless a print-on-demand feature is provided. The use of the standard browser print option "Print all linked documents" is discouraged. This feature generates wasted paper because duplicate documents are printed as each link's document is printed.

Classification must appear on printed output. Assume the available printer can print only black-and-white and thus ensure that the use of colors lends itself to printing.

3.4.2.2   Print On Demand

A print-on-demand feature would allow printing of the complete manual similar a current hard copy manual or logical sections such as a chapter or a set of instructions. Currently, this is accomplished by placing a hyperlink from the IETM to an Adobe PDF file of the manual.

As the fleet becomes more dependent on IETMs and less on traditional hard copy manuals, the need to print complete manuals will decline. However, the information needs to be presented to allow a user to print a logical chunk of data, such as a set of instructions, an operating procedure, or a piping diagram.

3.4.2.3   Sharing Data

Data sharing can occur before or after publication. Data sharing prior to publication should be via reference, and at publication, the share data should be embedded where used. Post publication data can be shared between logistics products by referencing hyperlinks or copying. Sharing through referencing is the preferred method, but implementation issues evolve with ensuring referenced material is available to the user and managing target links. To reduce management of target links, IDs should be persistent. The data should also be presented to allow sharing through copying either through saving using "Save as" or by "cutting and pasting".

3.4.2.4   Adobe PDF TMs Deployed in the IETM Domain

The Adobe PDF manuals deployed in the IETM domain should be text-searchable, hyperlinked for cross-references, and have a bookmarked TOC.

PDFs for technical manual print on demand (TMPOD) primarily provide a digital means to automate printing of TMs through DAPS. These manuals are sent to NSDSA for placement in the Navy stock system to support print requisitions. Because they are used primarily to provide printed manuals, PDFs created for TMPODs need not have the higher user functionality required of PDF manuals deployed in the IETM domain. The PDF manuals deployed in the IETM domain are not acceptable as a camera-ready copy because they contain color-coded hyperlinked cross-references, which will print in gray-scale or show as light print for hard copy.

3.4.3   Interactive IETM Session

This section covers the user interface requirements for Session Control, Context Filtering, and State Handling for highly interactive (e.g., class IV) IETMs. Both Handbook 511 and MIL-PRF-87268 address some of the issues within this section. Further clarification of these references will be provided in this section.

3.4.3.1   Session Control

Handbook 511 - 9.2.9 Session Control (Suspend, Resume, Nested Sessions).
a. The user should be able to suspend a session at any time (e.g., for a break or emergency).
b. A resume function should be capable of re-starting the session at the same point it was suspended.
c. At the time of resume, the user should be advised that some key parameters/condition settings may be out-of-date (e.g., aircraft safe for maintenance, temperature change, or other people worked on the end-item/platform during the suspension).
d. The system should support the three Exit Modes:
      1. Complete (Save and update history)
      2. Abort (Don't save or update history)
      3. Suspend (See a. above).

Session control is the ability to stop and start an IETM session in the middle of work. For highly interactive IETMs, this involves saving the state of the session for later reload to re-establish the user session back to where it was before the interruption.

All highly interactive (e.g., class IV) IETMs should support the 'complete' (save and update history file) and 'suspend/resume' functionality. The 'abort' should only be allowed in 'browse' mode on the end-user client.

FUNCTION	ICON	LOCATION / EXAMPLE
Session Complete Normal Exit	Icon: Check Mark Text: Complete	Mandatory – Via automatic pop-up at end of session Example: ✓ Complete
Abort Session		(Only in Browse Mode) same as end browse mode Example:
Suspend Session	Icon: Pause (two vertical bars) Text: Pause Session	Through Guide Post Example: ‖ Pause Session
Resume Session	Icon: N/A Text: Session Resume	Through Guide Post Example: Session Resume

3.4.3.2   Access/Authorization Control

The table below provides a summary of the five TFW authorization methods in the TFW Appendix G Application Security of the Navy Enterprise Application Development Guide. For technical manual information the General Public Service should not be used. New applications should work with Portal-supplied Common Identity, and IETM applications will still manage users for means of authorization.

	Advantages	Disadvantages
A General Public Service The portal provides no common identity information interface un-encrypted	Higher Performance	Higher risks because host server is exposed to the general Internet population; however, equality to current risk assumed.
	No application userID/password infrastructure required.	Should not be used for applications requiring any form of authentication/authorization.
	Easy to implement	
An SSL Service Portal provides no common identity information; however, the interface is encrypted.	Most browsers support SSL.	Requires a DoD PKI server certificate.
	Existing means of application authentication can still be used.	Lower performance.
Portal-supplied Common Identity without SSL. The portal provides common identity information; however, the interface is not encrypted.	Common Identity is available to provide personalization of the service.	The existing applications will need modifications to support the common identity (mapping).
	Higher performance without SSL.	Must read header field or parse PRI to determine common identity.
		Should not be used for applications requiring any form of authentication/authorization.
Portal-supplied Common Identity with SSL The portal provides Common Identity information, and the interface is encrypted. The application/service uses the common identity as a means of identifying users, tailors its functionality, and possibly assigns application local roles to those users. A	Support for the user's identity is now shifted away from the application/service developer. The application owner no longer needs to manage user passwords, but must still manage users for means of authorization.	The existing applications will need modifications to support the common identity. Application local user information will need to be stored in a local database.
	Common identity may be used for re-authentication to the application/service, because passwords are sent encrypted.	Requires a DoD server certificate.

use of this combination would be to mimic a SSO capability. An application/service may choose to accept the passed common identity to allow access and perform authorization for that user.	Can eliminate multiple login screens.	Lower performance.
Portal-supplied Common Identity with COTS Single Sign On (SSO) product and SSL

The portal provides Common Identity information, and the interface is encrypted. | Support for the user identity is now shifted away from the application/service developer. The application owner no longer needs to manage user passwords, but must still manage users for means of authorization. | Existing applications have to map the common identity to the existing user names. Application local user information will need to be stored in a local database. |
| Level of Trust: The service uses the common identity as its authentication, through the SSO product. Data sent over the UFS interface will also be encrypted providing trust that it will not be compromised in transit. This methodology provides a high level of trust. | Passwords are never sent over the UFS interface. | Requires a DoD server certificate. |

3.4.3.3   Bookmarks and Annotations

Handbook 511 - 9.2.20 User Annotations (e.g., comments, user notes, redlines, bookmarks).
    a. There should be a persistent visual indication that an annotation exists.
    b. The default initial presentation of annotations is to appear minimized.
    c. If there are levels of annotations (e.g., public, private, etc.), they should be visually differentiated.

Bookmarks are the ability to mark areas of interest to allow quick access. In today's environment, the terminology bookmark has been expanded to include "Favorites" and "Shortcuts." The use of the browser's bookmarking function has several implementation issues. The current browsers bookmark only at the page or document level and not to a paragraph, table, or figure. Another issue pertains to IETM Library deployments and ATIS Volume IDs. After each IETM update is installed, the users must update their bookmarks for that particular IETM.

Annotations are the ability of the system administrator or user to place special notes within a manual. These could be public information for all users such as special information that requires rapid deployment to the manual holders like "Advance Change Notices." Alternatively,

they could be private notes needed only by the user to assist in their training. Annotations are not easily supported within the browser, but a special function could be developed.

When an IETM bookmark and annotation function is developed, NMCI and IT21 requirements should be explored to determine the path where users can save their annotations. The following table details functions and Icons that should be part of the annotation function.

ANNOTATION	PUBLIC Icon	PRIVATE Icon	LOCATION
Redline		-----	
Create Bookmark	---	📖	Local Nav Utilities Bar Note: Ask whether creating or navigating to Bookmark
Goto Bookmark	📖	📖	Local Nav Utilities Bar Note: Ask whether creating or navigating to Bookmark If navigating to bookmark, update the "TOC" and the "Main" Areas to reflect destination
Bookmark minimized	📖	📖	Main/Full-Main Area Note: Indicates Location is Book marked
Create User Note	----	✍	Local Nav Utilities Bar
User Note minimized	✍	✍	Main/Full-Main Area Action: Selecting opens User note as a pop-up

Minimize/Exit User Note	Exit Pop-up with "Close" Button		Pop-up
Create Comment	---	🗋	Local Nav Utilities Bar
Comment minimized	🗋	🗋	Main/Full-Main Area Action: Selecting opens comment as a pop-up
Minimize/Exit Comment	Exit Pop-up with "Close" Button		Pop-up

3.4.3.4   Audit Trails

Audit trails are the ability of the IETM or system to know where the user has navigated. The development of support functions using "cookies" is a method for audit trails. Cookies can be tied to a user during a session, but depending on the network, these may not be transferred from station to station as the user moves through the ship. Additionally, the user can easily remove the cookie audit trail.

3.4.3.5   Return to Default/Initial State

This is the ability to reset a configurable user interface back to a default. That is, if lost, the user can activate the return to the default or initial state. This also applies to simulations and flow-tracing. The user will be given a pop-up asking if he wants to return to the initial default state. He must answer with the 'yes' button (or the 'y' key) prior to actually returning to the default state.

FUNCTION	ICON	**LOCATION / EXAMPLE**
Return UI to Default	Icon: Picture Frame with Panes Internal with smiley face	Through Guide Post Example: 🖼☺

3.4.3.6   Browsing

Handbook 511 - 9.2.2 Browse Capability. Browse capability should be available.
a. User controlled access mode.
b. No tracking of activities.
c. Not rigidly tied to IETM controls.

MIL-PRF-87268 Spec paragraph:
3.5.2.1.3 BROWSE BACK, BROWSE NEXT, and BROWSE EXIT. These functions shall be required for all systems for which the NEXT and BACK functions set interactive system variables that are used to effect subsequent navigation through the IETM. These navigation functions shall act as NEXT and BACK, but shall not set or reset system variables automatically or through dialogs. Once either BROWSE BACK or BROWSE NEXT is selected, other navigation functions shall not be available until the user returns to the originating window by

invoking the BROWSE EXIT function. The presentation system shall provide a distinct visual indication that the system is in browse mode. When either the BROWSE BACK or the BROWSE NEXT function is not logical (such as at the beginning of a string or at a mandatory branch point), only the complementary BROWSE function shall be active. System variables shall still be set and shall be activated and logged to a temporary state table. It is not necessary to post system variables to the permanent state table when in browse mode.

Browsing is the ability to preview an IETM session prior to work. For highly interactive IETMs, this involves not saving the state of the session during browsing for later tracking or reloads because it is not yet being performed.

	ICON	**LOCATION / EXAMPLE**
Begin Browse Mode	Icon: Eyeglasses Text: Browse	Navigation control bar 👓 Browse
Browsing Mode Indicator	Icon: Eyeglasses Text: Browse Mode On	(Optional in status footer) 👓 Browse Mode
End Browse Mode	Icon: Eyeglasses 👓 with "no or don't" slash ⊘ Followed with Text: Browse	Navigation control bar (Required during browse mode – may replace original browse mode icon when in browse mode) 🚫 Browse

3.4.3.7   User Interaction/Screen Dialogs

Handbook 511 - 9.2.13 Dialogs.
a. Support should be provided for both pop-up dialog box and in-line dialogs in the display frame itself.
b. Developers should use best commercial practices for entering data in dialog boxes (e.g., radio buttons, check-boxes, fill-ins, combo boxes, scrolling selection lists, etc.).

Dialogs are the pop-ups and in-line collection mechanisms for gathering information for the IETM from the outside world. The types of information to be collected can include, but is not limited to, whether or not specific operations have been performed, the present condition of the system, and the environmental situation.

3.4.3.8   Dialog Boxes

> MIL-PRF-87268 Spec paragraph: 3.1.4
> Dialogs. Dialogs shall be formulated as prompting questions which are intended to be presented by the EDS to the user. Dialogs shall be developed so that they require a user to respond (i.e., enter data) before any subsequent processing is undertaken. The dialog information in the IETMDB shall be formulated so that once a dialog is presented to the user, and answered, certain assertions about the user's environment are able to be made. The information associated with Dialogs shall permit the presentation system to provide actions to follow all completed Dialogs. Each of the immediately subsequent procedures available for presentation to the user shall be conditional upon one of the possible answers requested by the prompt.

> MIL-PRF-87268 Spec paragraph: 3.4.1.4
> Dialogs and dialog controls. A dialog box shall be used as the principal means by which the user converses with the underlying IETM application software. It shall be displayed in a separate window, which may overlay the primary window, and shall contain a heading and one or more graphical controls (buttons). Dialogs shall be one of five kinds: alerts, fill-in-the-blanks, single/multiple choice, selection-in-list, or composite. Dialog boxes shall appear in a consistent and prominent location on the display. All Dialogs shall contain the OK function and, with the exception of information only alerts, the CANCEL function. The OK or the CANCEL functions shall finish the user interaction with the dialog box. The layout and arrangement of all Dialogs shall allow the user to differentiate between the material they contain and other types of displayed information. See the figure for examples of different types of Dialogs.

Whenever possible, the dialog boxes will appear in the center of the screen. The appearance of the dialog boxes within an IETM should be consistent throughout the IETM. With the exception of information only alert dialogs, all dialog boxes will contain an OK function and a CANCEL function. Information only alerts only require an acknowledgement, and therefore, only require an OK function. If the user activates the CANCEL function, the IETM display will return to the display that existed immediately prior to the display of the dialog box. Additionally, dialogs may contain a HELP function to provide further information about the dialog box.

3.4.3.8.1   Dialog Push Buttons

> MIL-PRF-87268 Spec paragraph: 3.4.1.4.3
> Dialog push buttons. Dialog boxes shall contain graphical controls called push buttons. A push button shall be a word or graphic icon on the screen used to select or initiate an action. Push buttons shall be large enough allow positioning of the cursor on the push button. Push buttons or choices shall provide visual feedback when selected. Push buttons shall be found on every type

of dialog box. They shall each be single action entities. Push buttons shall indicate selections made or invoke a general action (e.g., CANCEL or OK). Push button shapes shall be consistent, (e.g., box, circle, or arrow) with the name of the selection or action written inside of the shape. Common push buttons (OK, CANCEL) shall be displayed along the bottom of the dialog box. The common dialog buttons shall correspond to completing the last selection before leaving the dialog box.

Dialog push buttons are used as a means for the user to communicate with the IETM. Push buttons can be radio buttons (e.g., in single-choice dialog boxes), check boxes (e.g., in multiple-choice dialog boxes), or functions (e.g. the selectable function OK on an alert dialog box).

3.4.3.8.1.1   Usage of Dialog Push Buttons

MIL-PRF-87268 Spec paragraph: 3.4.1.4.3.1
Usage of push buttons. When presented with a dialog box, the user shall be required to complete the dialog or acknowledge its presence. The method of completing a dialog transaction shall be the use of push buttons. This shall be done by moving the cursor onto the push button and activating the SELECT function. After selecting the preferred options, the user shall have at least two push buttons located in the bottom of the box. The two buttons shall have the following functions "OK" and "CANCEL". "CANCEL" shall be equivalent to the CANCEL function and shall be used to cancel the dialog box. The "OK" function shall communicate to the application software that the user has completed the dialog.

When a dialog box is displayed, the user will have an opportunity to communicate information to the IETM through push buttons. The user-input information is displayed only and is not actually communicated to the IETM until the user activates the OK function by clicking on the "OK" push button. If the user selects the "CANCEL" button, no information will be sent to the IETM and the IETM will return to its previous display.

3.4.3.8.1.2   Presentation of Dialog Push Buttons

MIL-PRF-87268 Spec paragraph: 3.4.1.4.3.2
Push button presentation. Common push buttons ("OK", "CANCEL", and "HELP") shall be displayed along the bottom of the dialog box. The common dialog buttons shall correspond to a completion of action, which is the last selection the user makes before leaving the dialog box.

The common push buttons will be displayed in the following order centered along the bottom of the dialog box: "OK", and where they exist, "CANCEL" and "HELP".

3.4.3.8.2   Dialog Cursor Movement

MIL-PRF-87268 Spec paragraph: 3.4.1.4.1
Dialog cursor movement. The selectable only movement mode shall be used when filling in Dialogs. The cursor shall move only to items which require input from the user.

The default location of the cursor (the location of the cursor when the dialog box is initially displayed) in a dialog box is at the first selectable item (uppermost). When the selectable only movement mode is used, it restricts the allowable cursor locations to the radio buttons, check boxes, fill-in-the-blank spaces, and push buttons within the dialog box. Cursor movement can be accomplished through the tab and enter keys and through point and click input from a pointing device such as a mouse, trackball, or stylus. The user response method for moving the cursor should be consistent throughout the operation of the IETM.

Cursor movement within dialog boxes should be consistent throughout the IETM. The most common way to navigate through a dialog box is to use the tab key to move from field to field and the enter key to signify "OK" or that the technician is finished with the dialog box. These keys can be used in conjunction with the point-and-click method. The user should be able to move the cursor back within the dialog box either via the backspace key or the pointing device. Pressing the Enter key should send all data items which have been entered into the dialog box to the IETM processor, and thus finish the dialog box. Pressing the Enter key is functionally equivalent to pressing the "OK" push button.

3.4.3.8.3   Radio Buttons, Checkboxes, Text Input, Pull-down Menus, Buttons

The following are the maximum dimensions for various controls.

FORM ELEMENT	MAXIMUM DIMENSIONS[3]
Radio Buttons	11 x 11 with 7 pixels afterwards
Checkboxes	12 x 12 with 6 pixels afterwards
Text Input Field	24 x 169 pixels at 20 points
Text Area	77 initial default height for one row and goes to 80 for 3 rows high x 184 pixels (at 20 columns)
Pull-Down Menu	23 pixels high x longest selectable text within menu
Multiple Selections	38 x 54 pixels
Submit Button	24 x 72 pixels

3.4.3.8.4   Dialog Titles

All dialog boxes used in Navy IETMs will contain a dialog title. All titles should be centered at the top of the dialog box and displayed in all uppercase letters. Titles should be presented in a distinctive manner so that they cannot be confused with messages, response alternatives, or other text items.

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[3] Adapted from http://hotwired.lycos.com/webmonkey/99/41/index3a_page5.html?tw=design

3.4.3.8.5   Dialog Box Types

Dialog box design throughout the IETM should remain consistent to preserve a common "look and feel".

3.4.3.8.5.1   Alert Dialog Box

MIL-PRF-87268 Spec paragraph: 3.4.1.4.4
Alert Dialogs. Alert messages shall include Warnings, Cautions, and Notes; any message, communication, notice, or output which requires manual acknowledgment by the user; or message generated as a result of erroneous user inputs or sequence control actions. Alerts shall be used to provide information regarding the processing status of user inputs and requests. They shall also be used to provide information about the status of the system's internal components (e.g., low battery power, improper functioning of the operating system or memory module).

An alert is any message which must be acknowledged by the user before he can proceed. An alert or alert message must be displayed in a dialog box. Alerts should be brief, consistent, strictly factual, informative, and written in the active voice (e.g., "Do not operate near an open flame!").

The "OK" button will in general be the only input push button displayed since the normal user reaction to an alert dialog will be acknowledgment of the alert. However, the "HELP" button may also appear in alert dialogs to provide the user with further information about the alert. The figure shows an example of an alert dialog box with an optional icon.

Message Type Here

Any message here to alert the user.

OK

Figure 3.6

3.4.3.8.5.2   Fill-in-the-Blank Dialog Box

MIL-PRF-87268 Spec paragraph: 3.4.1.4.6
Fill in the blank Dialogs. This shall be the dialog type that provides for the input of alphanumeric characters in response to displayed questions and/or data entry fields (e.g., inputting user identification data when signing on to the computer system; entering the title and/or number of database frames that contain errors or discrepancies, etc.).

MIL-PRF-87268 Spec paragraph: 3.4.1.4.6.1
Fill in the blank presentation. For all fill in the blank type Dialogs, data entries shall be prompted explicitly by displayed labels for data fields. The user shall be given the capability to DELETE or otherwise change previously filled in entries.

Fill-in-the-blank type dialogs allow input of alphanumeric characters in response to displayed questions and/or data entry fields (for example: inputting user-identification data when signing-on to the computer system). The dialog-box design must indicate clearly the nature of the required input, limitations on number or type of alphanumeric characters, units (if input is a measurement), and any other required conventions.

Wherever possible, the data field label should be placed on the same line as user input. Labels for data fields should be distinctive. Field labels will be placed in close proximity to their respective data entry area and will end with a colon (:). The figure uses the technician's input of built-in test results as the means of illustrating the "fill-in-the-blank" dialog box. The cancel button provides the user with the capability to abort the action.

Figure 3.7

3.4.3.8.5.3   Single Choice Dialog Box

MIL-PRF-87268 Spec paragraph: 3.4.1.4.5.1
Single choice (radio buttons). Selectable items that are mutually exclusive (i.e., only one item from the list can be selected at any one time) shall be presented as a single choice dialog constructed using radio buttons. Radio buttons shall be grouped into lists of mutually exclusive choices. Each radio button shall appear as a consistent shape (e.g., a circle) and shall be marked with a visual indicator when the button is selected.

Single choice dialogs will be displayed using radio buttons. Radio buttons will be circles. The user selects the choice by pointing and clicking in the appropriate circle. A filled circle will indicate that the choice has been made. In a single choice dialog, only one choice may be made. The visual indication to the user that a choice has been made should be displayed immediately upon selection. Disabled radio buttons will not be selectable but may be visible.

Enter title here

Select from the following:

⦿ Selection 1

○ Selection 2

○ Selection 3
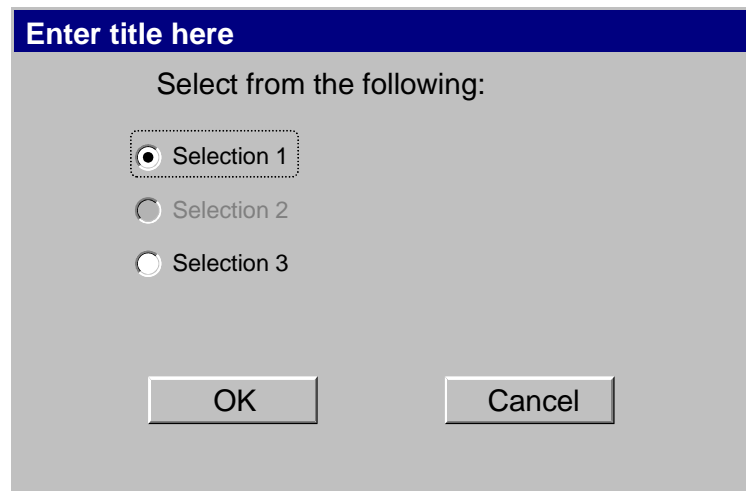
[OK]   [Cancel]

Figure 3.8

Another method that is acceptable is a combo box with drop down choices, a common example is the entry of the state of residence on a web form such as   [AL ▼]   .

3.4.3.8.5.4   Multiple Choice Dialog Box

MIL-PRF-87268 Spec paragraph: 3.4.1.4.5.2
Multiple choice (check boxes). A multiple choice dialog shall be the type of dialog in which one or more selections are able to be made from a group of choices. Multiple selections shall be made using check boxes. Check boxes shall be grouped into lists of non-mutually exclusive choices. The user shall be given the capability to check one or more of these boxes as needed using the cursor or number selection technique. Each button shall appear as a consistent shape (e.g., a square) and shall be marked with a visual indicator when the button is selected. Check boxes shall employ different shapes from radio buttons.

The visual cue for multiple-choice dialogs will be square check boxes. The visual indicator will be an "X" or a checkmark (✓) contained within the square when a choice is made, as shown in the figure. The visual indicator will appear at the instant of selection.

Multiple choice dialog boxes allow the user to choose one or more alternatives from a group of related choices which are displayed to the user. One or more choice selections can be made by using the check boxes. The figure presents the user with a multiple choice dialog box which allows selection two of four possible maintenance conditions preparatory to beginning a maintenance action.

Enter title here

Select from the following:

☐ Option 1

☐ Option 2

☐ Option 3

[OK]   [Cancel]

Figure 3.9

3.4.3.8.5.5   Composite Dialog Box

MIL-PRF-87268 Spec paragraph: 3.4.1.4.8
Composite dialog. A combination of the previous types of Dialogs may be located together in one composite dialog box.

The composite dialog is a dialog box in which the user is presented different types of dialog choices. The composite dialog box may contain any combination of fill-in-the-blank dialogs, single-choice dialogs, and multiple-choice dialogs.

User Response

Data Entry Field

ENTER TECHNICIAN ID

MULTIPLE CHOICE: OPTION?:

☐ Option 1   ◉ YES

☐ Option 2   ○ NO

☐ Option 3   ○ MAYBE

[OK]   [Cancel]

Figure 3.10

3.4.3.9   Context Filtering

Handbook 511 - 9.2.10 Context Filtering.
        a. The system should have the ability to perform context filtering on effectivity as a minimum.
        b. The system should provide the user a mechanism for entering/modifying configuration parameters.

Context filtering is where the presentation system automatically displays the relevant information applicable to the existing situation. (For an example, only a specific piping system would be displayed in a compartment diagram or the level of instructions would be filtered based on the users level of ability (novice vice expert).

Table of Implementation of Features:

Feature	Effectivities	Manually Modify Configuration?
CLASS 2 Systems (Linear)	Must be written into initial document as discrete choices	None
CLASS 3 Systems (Linear Chunked)	Use either a class 2 discretely authored in choices or a class 4 interactive dialog	Via Guide Post – Optional Section
CLASS 4 Systems (Highly Interactive Database Driven)	Obtain input from user via interactive dialog	Via Guide Post – Optional Section

3.4.3.10 Links to Other Programs – TFW Interface, ATIS Interface

MIL-PRF-87268 Spec paragraph: 3.2.1.6
Instructions for interactions with IETM utility functions. Information shall be provided which describes procedures for all utility functions included as supplements to the primary functions of the IETM (e.g., preparation and submission of associated maintenance action reports; accumulation and submission of the IETM deficiency reports citing IETM errors of problems in using the IETM; ordering of needed parts; work center maintenance management; use for on station training; acquisition of additional IETM discs). Instructions on use of these functions shall be included in the body of "How to Use This IETM" information.

Handbook 511 - 9.2.23 Interface to External References and Systems. A single user interaction should electronically link to external references (e.g., another IETM) or external systems (e.g., CAMS, IMDS, FEDLOG, GCSS, Supply Support/Parts Ordering, etc.).

Developers can be expected to deliver into different platform and configuration environments. The importance of developers knowing and understanding what environments they are deploying into cannot be overstated. Some developers will be faced with deploying

their products into a wide variety of environments, while others may have the luxury of only delivering into the latest environments.   These environments are continually changing but may include Automated Installation, Stand-Alone, Networked/Web Server, ATIS, and Web ATIS configurations. Additional information or indices will be required as part of the IETM delivery to support other systems, such as the Generic Index of Technical Publication, TDMIS and ATIS Indices, and training. This document will not specifically address each of these, but the developers need to understand the environment required for their IETM's use.

In order to be delivered to an end-user via Task Force Web (TFW)/Web Enabled Navy (WEN), the developer must provide a TFW User Facing Service (UFS). Please refer to TFW Navy Enterprise Application Development Guide, para 2.1.8, "User Facing Service Interface" for details.
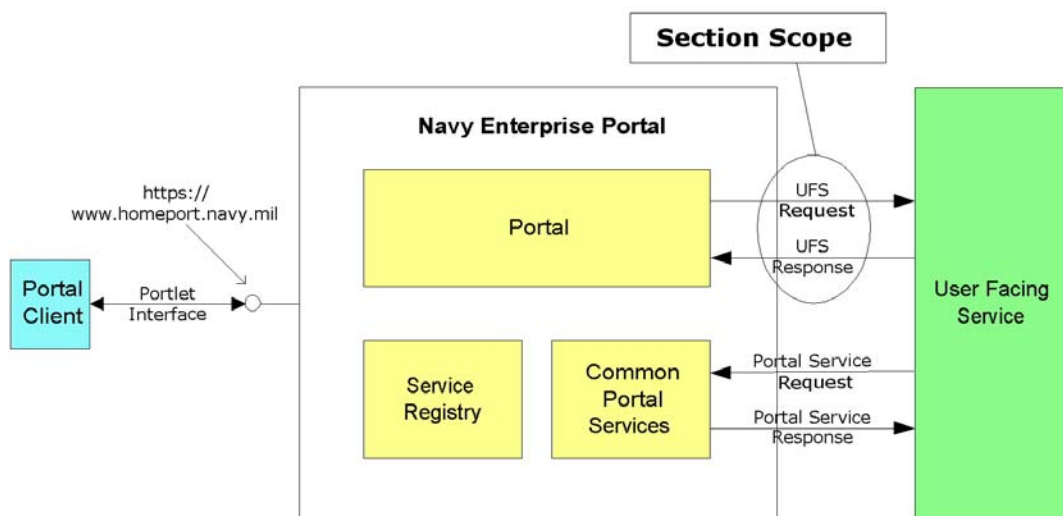
Figure 3.11

3.4.3.11   Screen Stacking

The following figure illustrates screen stacking where multiple windows are opened and overlap each other.
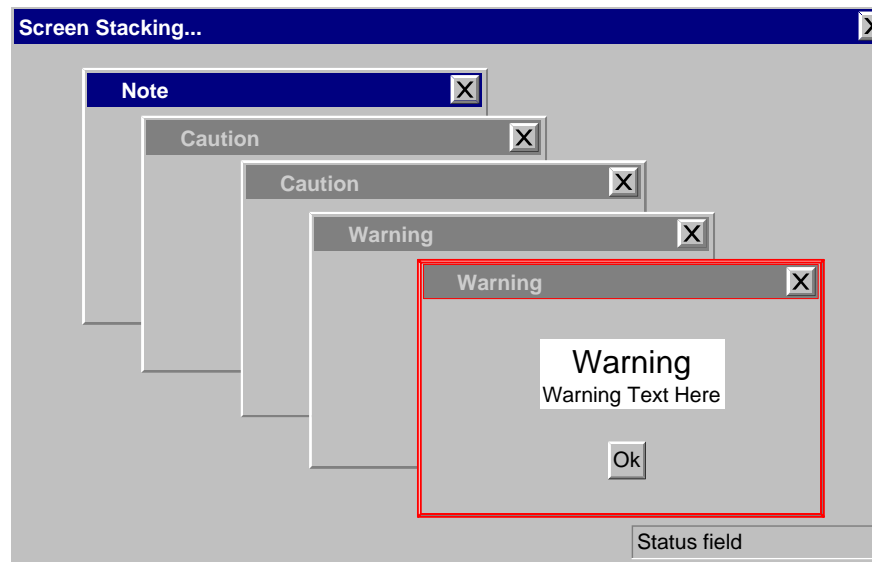
Figure 3.12

Screen Stacking is an option which can confuse the novice user, and this practice is to be avoided. The one exception is for those systems which handle minimized alerts (Danger, Warning, Caution, and Note) in accordance with section 3.3.4.5 with a persistent icon in the status bar representing the alert condition present.

3.4.3.12   Response Time

Handbook 511 - 9.2.18 Performance (Response Time by Context).
        a. Developers should implement a less than 2-second response time goal.
        b. If the response time is greater than 2 seconds, the system should provide visual feedback to the user (e.g., use a standard cursor for Processing Indication).

The operating system usually handles the system busy indication. Developers should ensure that if the IETM is expected to be busy for more than 2 seconds, the cursor changes to an hourglass until the busy condition passes and then returns to its previous form.

3.4.3.13   Searching (Current Page vs. IETM vs. Lib vs. Web)

Handbook 511 - 9.2.8 Search & Lookup.
        a. Use the standard icon to get the user into a search mode.
        b. The user should be presented with the search options available.
        c. At a minimum, a Keyword search against valid entry points (TOC/List of Content) should be available.

> d. The system should provide a search capability against Metadata (e.g., Keywords, tagged data, indexable data, searchable data, etc.) when it exists.

Searching is the ability to request information about a topic and then quickly find the correct information. A sailor needing to repair a hydraulic system's globe valve would want to quickly find information on a specific valve and not have to manually search a returned list of shipboard valve marks or a list containing unrelated data such as heart valves. The search capability should include keywords and strings including alphanumeric and hyphenated words and the ability to further refine a search within a returned list of possibilities.

Searching occurs from different domains: the current page, the current IETM, a specific library or digital collection, and the intra/internet. Each domain will use a different set of search engines. While the browser's native functions can be utilized for page searching, searching a whole IETM will require a search engine that can search all the current IETM's files and build the list of possible candidates for the user. A search within a specific library, digital collection, or the intra/internet is usually handled by that system's search engine. For example, ATIS has several built-in search capabilities, and the Internet has search engines such as Infoseek, Yahoo, and Google.

All individual IETM search engines should support the capability to search keywords and full text strings, including alphanumeric and hyphenated words. They should support advanced Boolean searches and the ability to further refine a search within a returned list of possibilities.

The following table details functions that should be part of the search engine.

FUNCTION	ICON	LOCATION
Search – Using additional Subdialog for meta data etc	⚲ :Search Advanced	Local Nav Utilities Bar Results:
Launch Search	⚲ :Search	
Search TOC with Simple Keyword	⚲ :Search TOC	Top of TOC Results: Takes you to that point in the TOC
Search TOC Again/Find Next	⚲ :Search TOC	
Search Local Document	⚲ :Search Document	Local Nav Utilities Bar
Search Doc Again/Find Next	⚲ :Search Document	
Search Library	⚲ :Search Library	Library Navigation Bar Results in: "Main" (or "Full Main") Area
Search Libr. Again/Find Next	⚲ :Search Library	

APPENDICES

APPENDIX A USER INTERFACE INNER SHELL SCREEN

A.1 USER INTERFACE SCREEN REGIONS TOOL

This section is intended to be used to lay out standard Inner Shell screens for all developers. Screen shots are provided as visual guidance. There are several examples that allow developers to split up their main display region in a variety of ways to suit specific needs. Most will probably use the basic main screen layout. The regions and a basic description are listed below.

- Guide Post Region – Used to get to custom or IETM-specific controls.

- Library Navigation / Control Bar Region – Reserved for higher level (above the IETM) controls (e.g., for the library, portal, etc.).

- Local Navigation / Control Bar Region – Reserved primarily for the current ETM controls.

- Classification / Distribution Marking Bar Region – self-explanatory – (i.e., "UNCLASS FOUO" or "CONFIDENTIAL NOFORN").

- Table of Contents Region – self-explanatory.

- Status Bar Region – Used to communicate status and other messages to the end user.
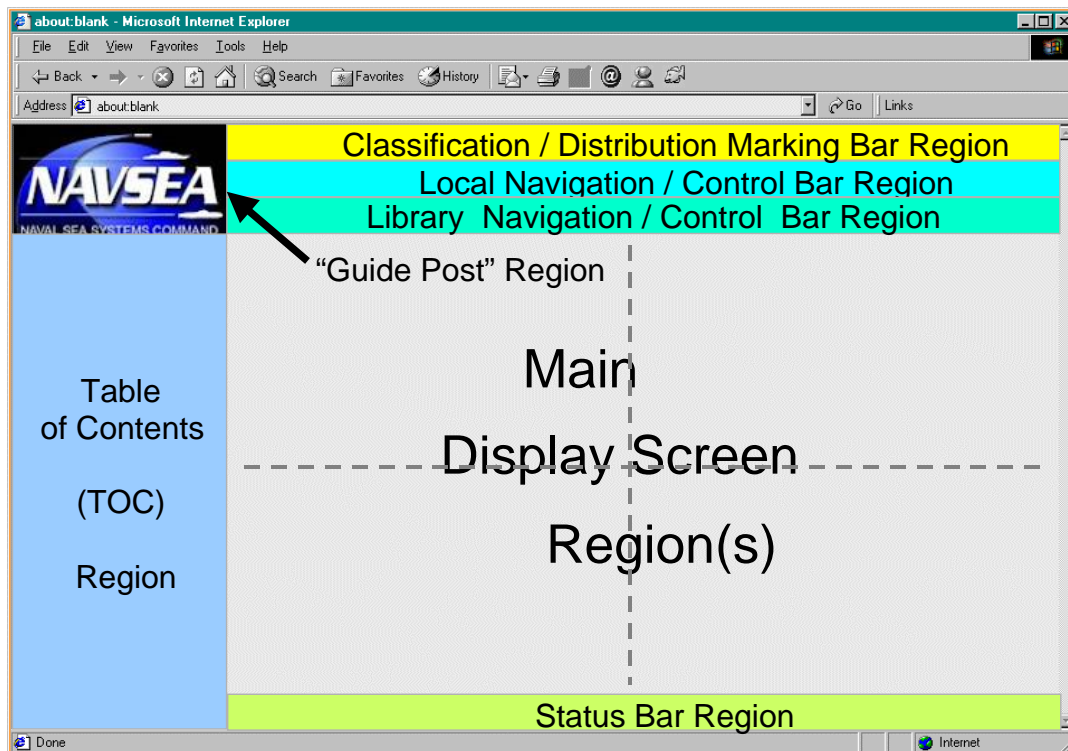
Figure A-1

A.1.1   Single Main Frame Layout

This example shows the layout with TOC and just the main single frame layout with classification bar and status bar. This will likely be the most widely used layout.
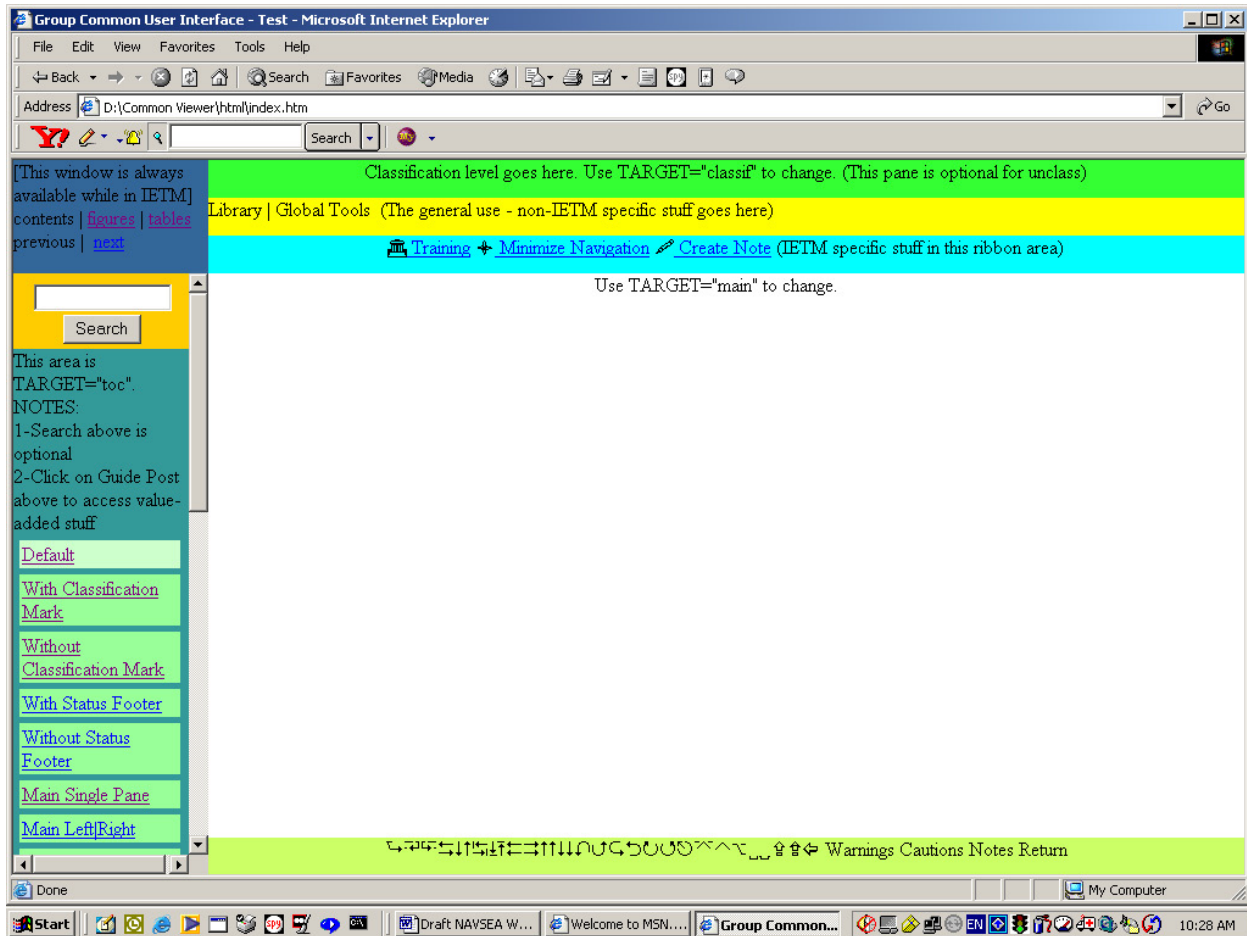
Figure A-2

A.1.2   Left | Right Dual Frames Layout
        This example shows the layout with the TOC and a left | right frame layout with all the other bars / regions included.
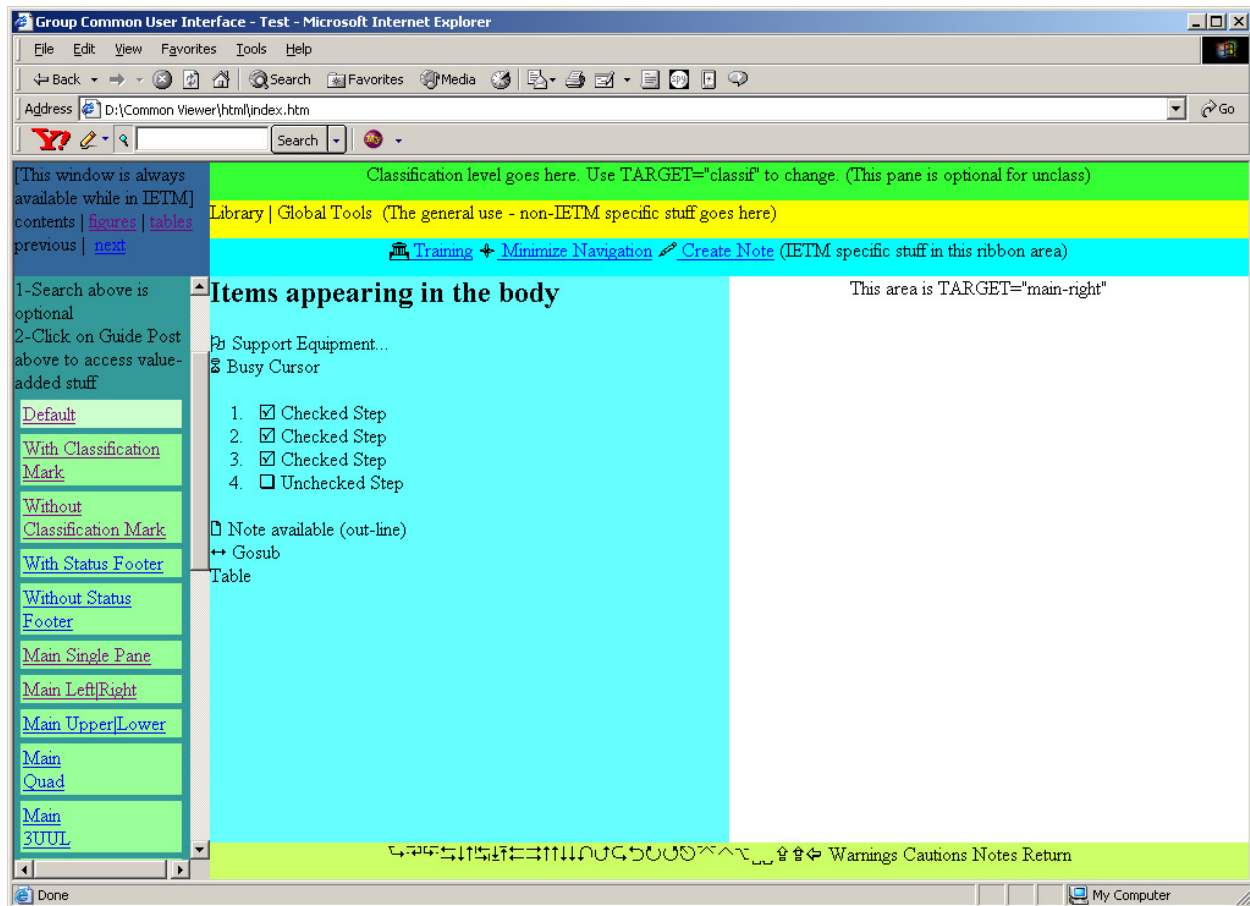
Figure A-3

A.1.3   Upper | Lower Dual Frame Layout
This example shows the layout with the TOC and an upper | lower frame.
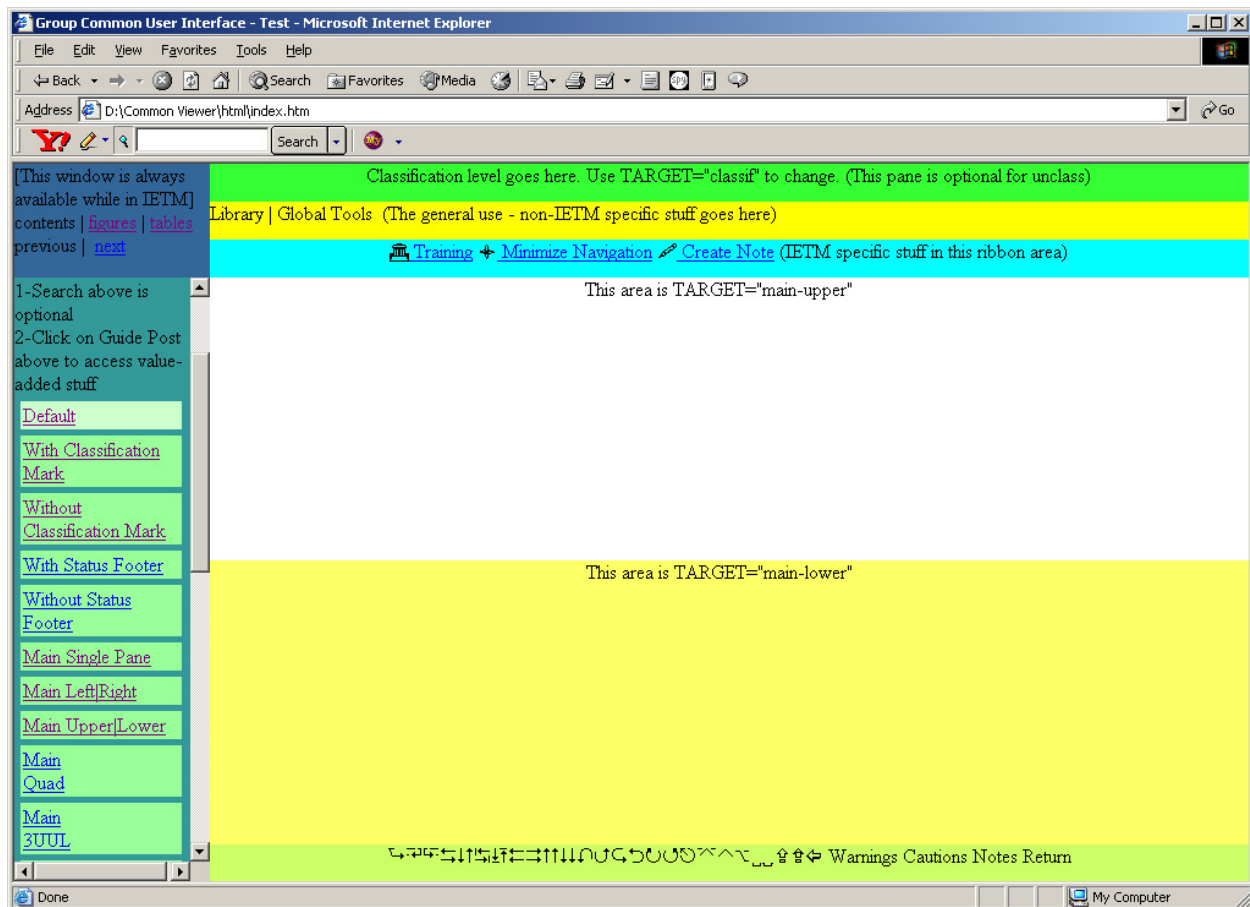
Figure A-4

A.1.4   Quadrant Frame Layout

This example shows a quadrant-based frame layout with the TOC and all bars/regions.
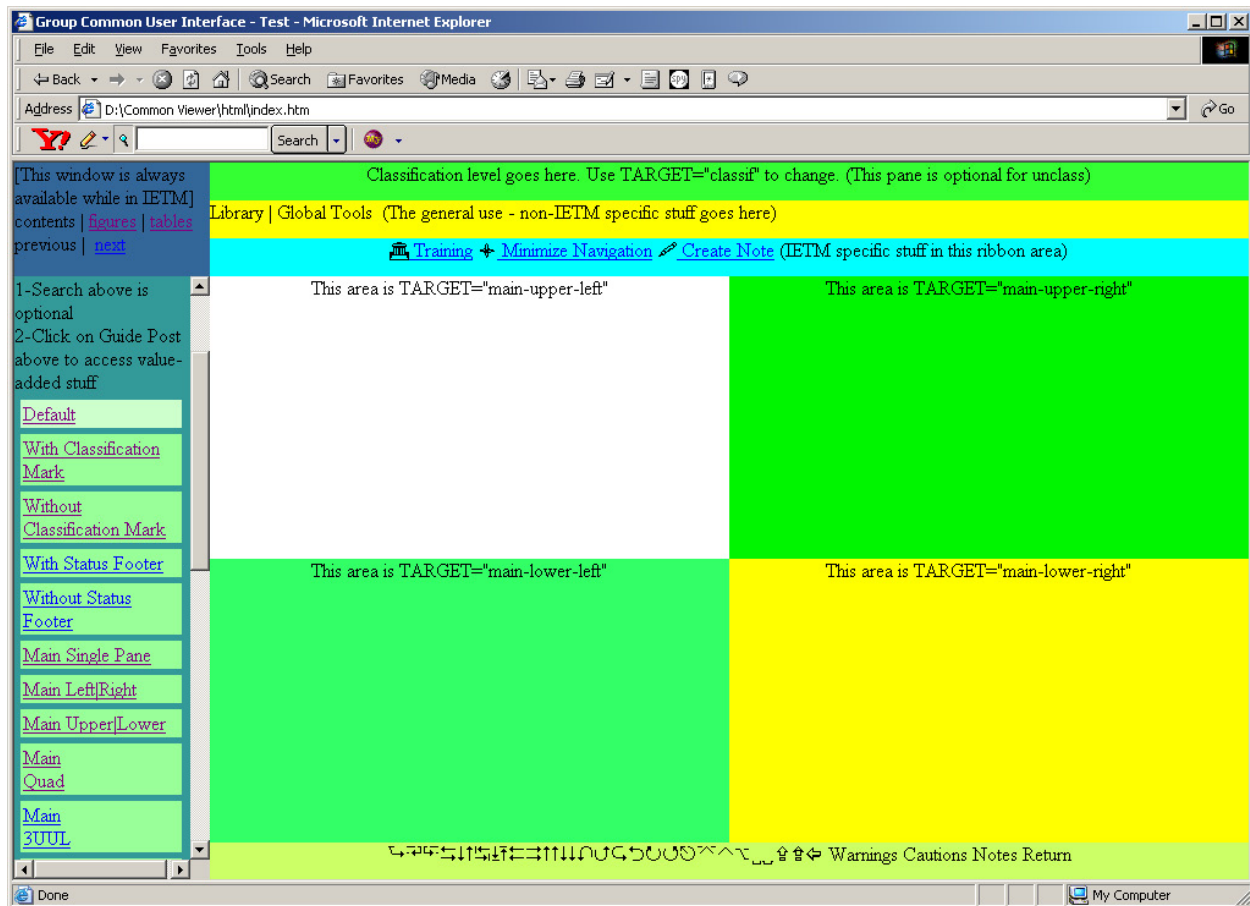
Figure A-5

A.1.5   Triple Frame Layout

This example shows a triple frame layout (upper left, upper right, and lower) with the TOC.
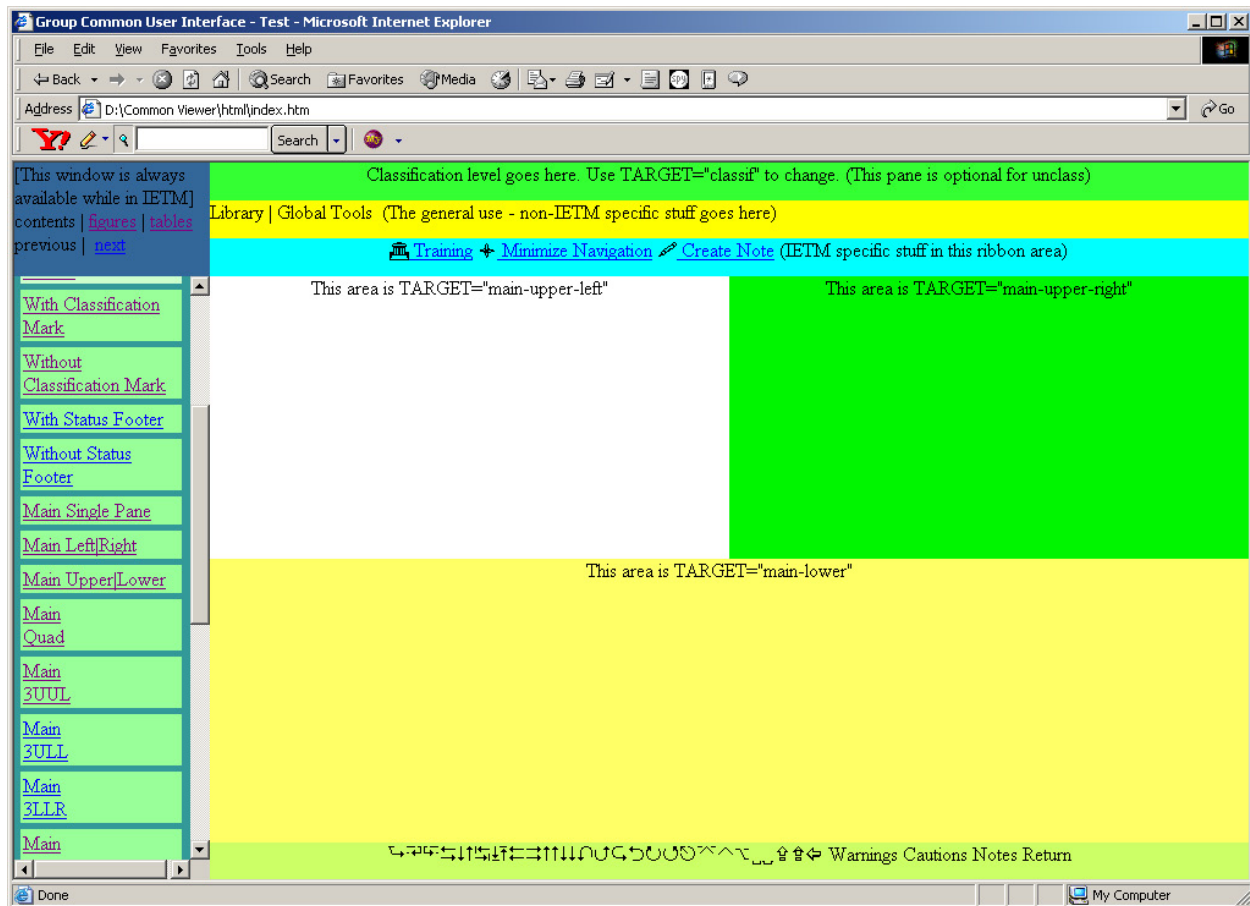
Figure A-6

This example shows another triple frame layout (upper, lower left, and lower right) with the TOC with all bars/regions.
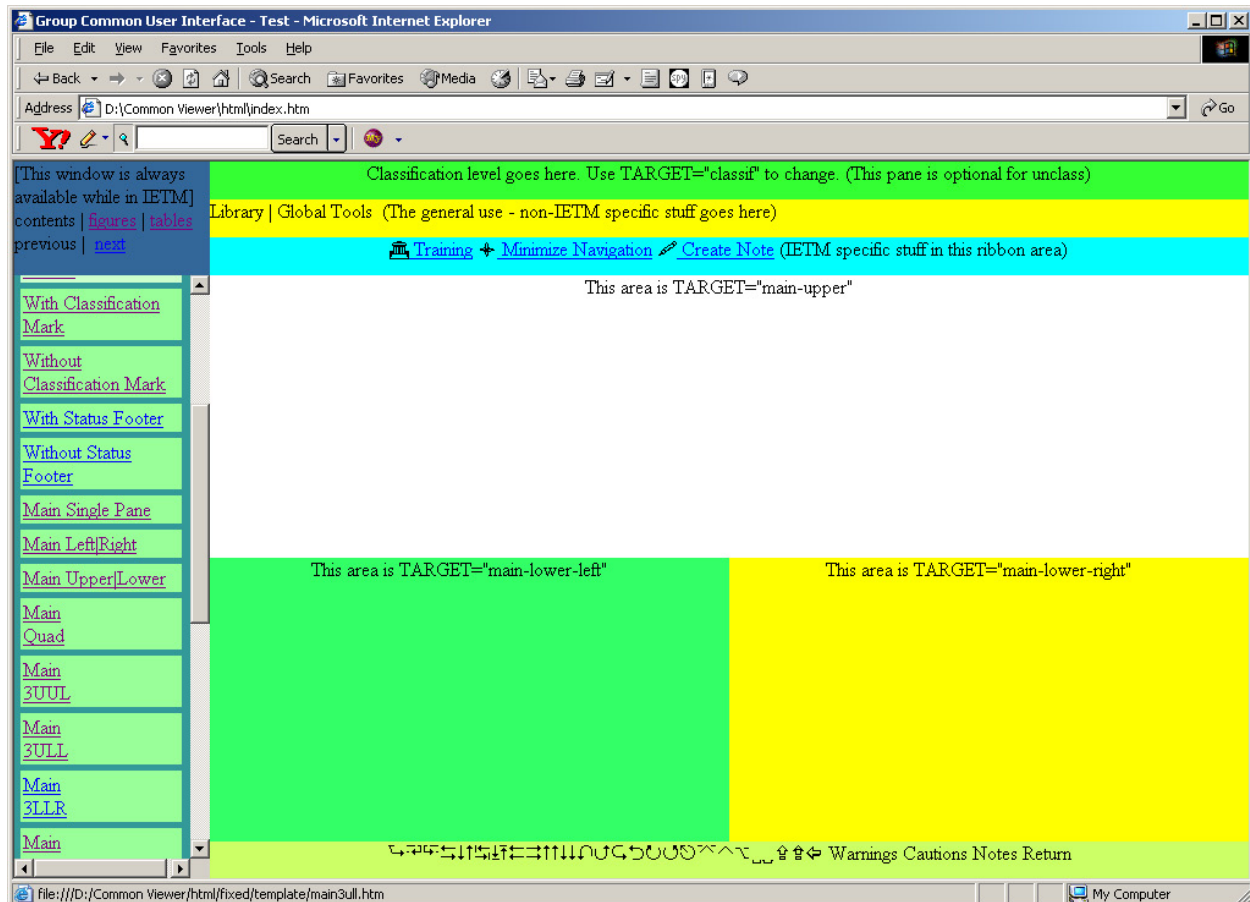
Figure A-7

This example shows another triple frame layout (upper left, lower left, and right) with the TOC with all bars/regions.
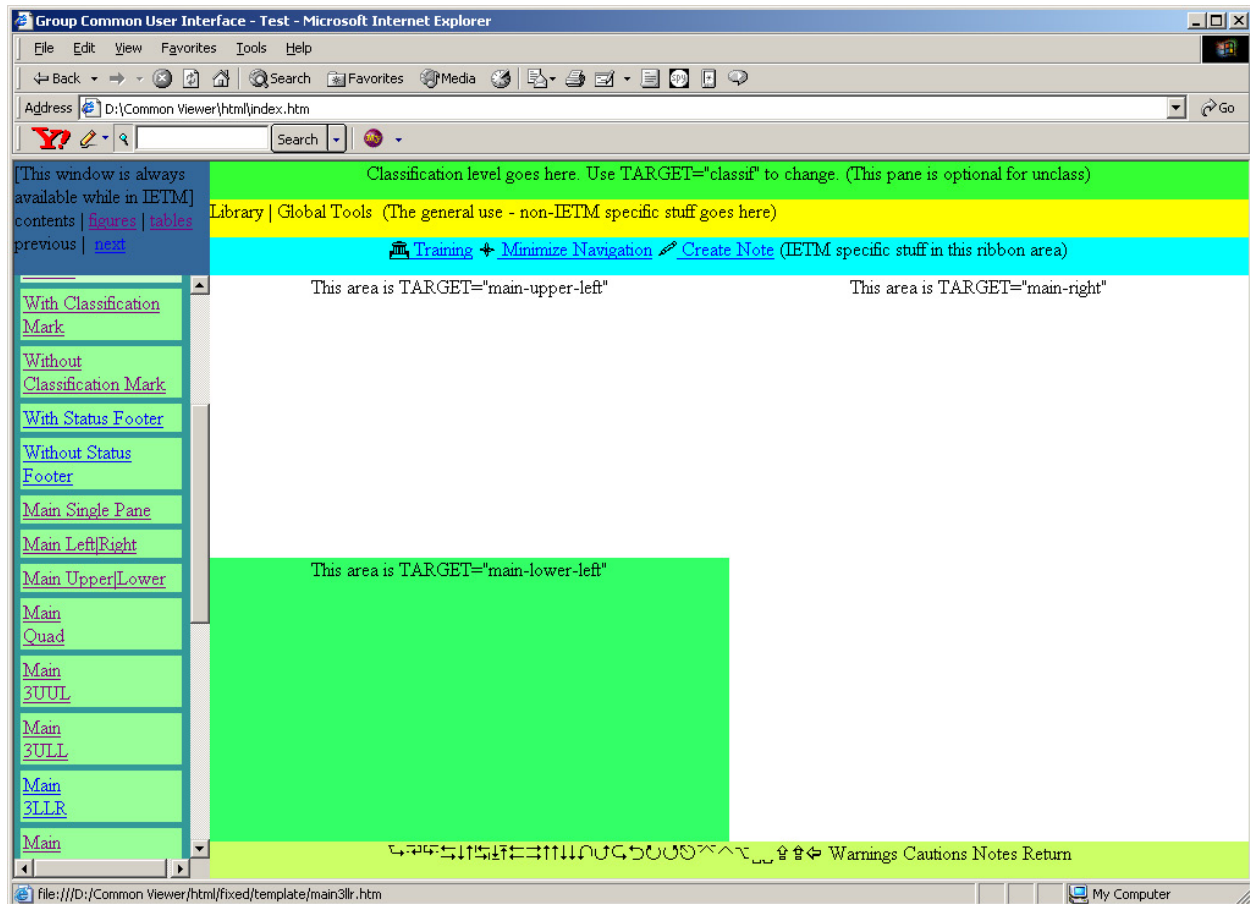
Figure A-8

This example shows another triple frame layout (left, upper right, and lower right) with the TOC but without the Classification Bar.
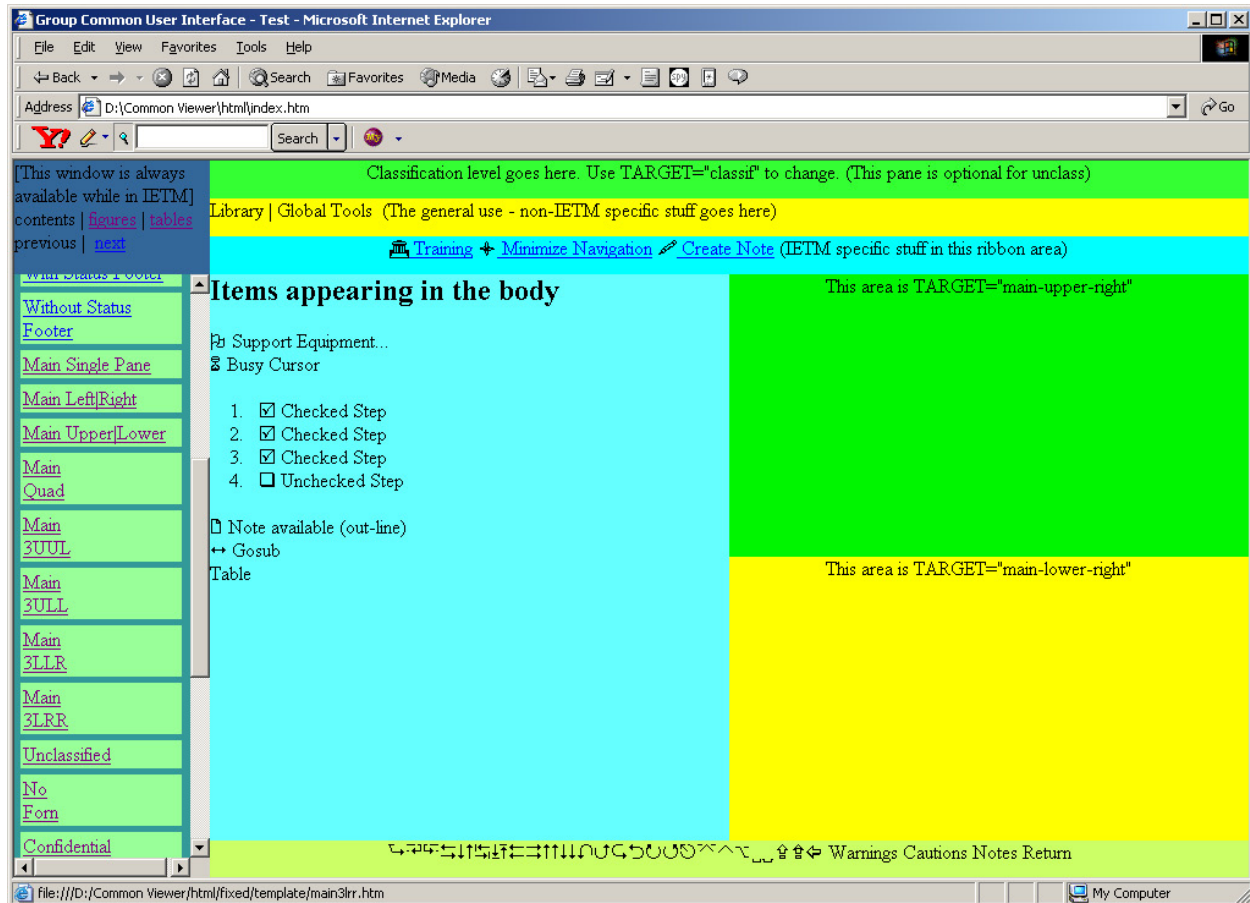
Figure A-9

A.1.6   No TOC Frame Layout

This is the layout for use with graphics, foldouts, parts, and schematics to give more screen real estate to the user. Note that the user can still access the "Guide Post". (Whether or not a graphic is displayed in a separate window is a separate issue.)
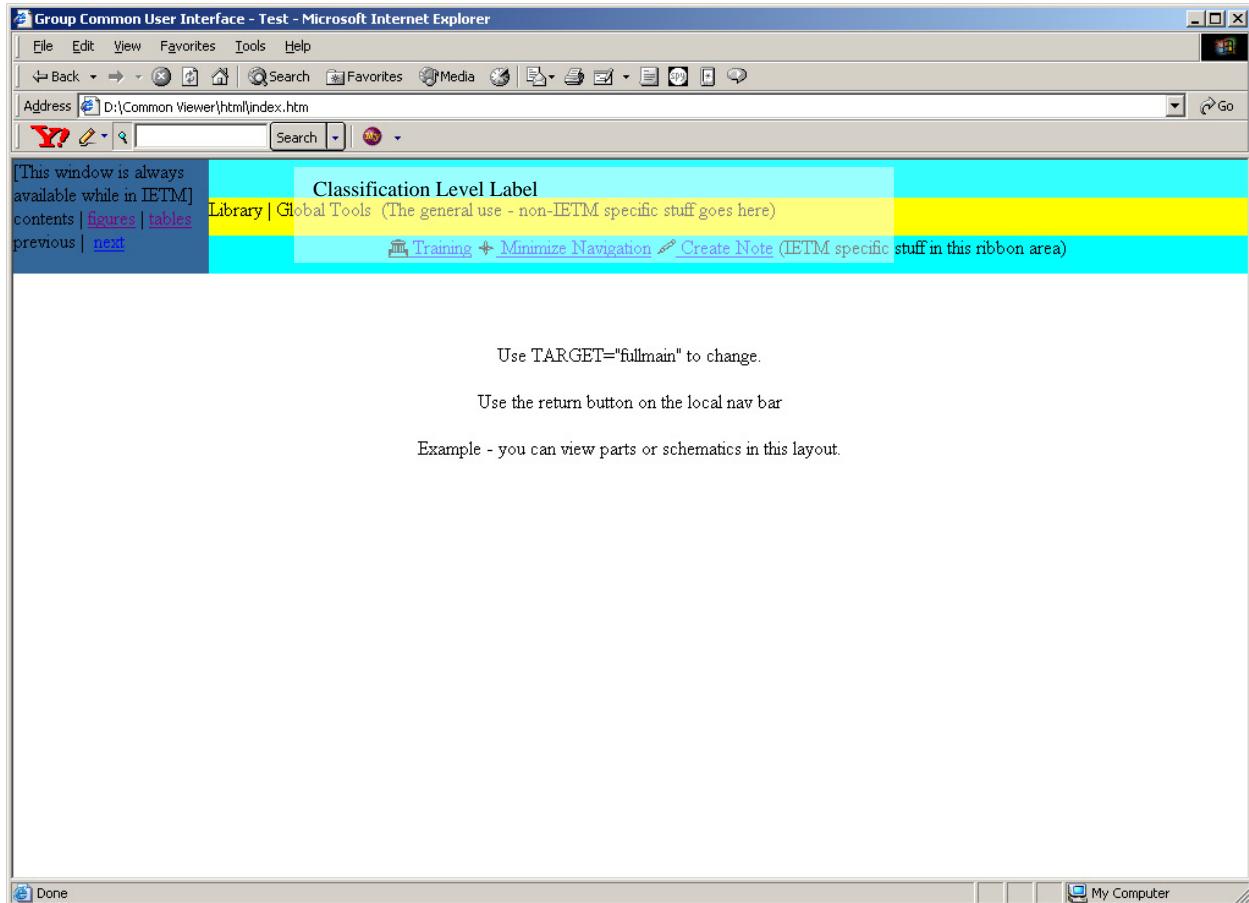

Figure A-10

A.2 USER INTERFACE REGION TEMPLATES DOCUMENTATION

Source code for the given examples will be provided in the next version of this document.

A.3 EXAMPLE TOC.HTM FILE:

Source code for the example Table of Contents will be provided in the next version of this document.

APPENDIX B STANDARD ICONS AND SYMBOLS

As a part of the common user interface, the following standard icons and symbols should be used by developers.

NOTE: The following table makes use of these fonts: symbol, webdings, wingdings, wingdings 2, and wingdings 3.

Element	Description	Function	Indicator	Sample
Browse Mode	Preview the IETM without executing it. (That is, don't take any automatic actions such as submitting a part order automatically to supply)	Begin Browse Mode	Icon: Eyeglasses Text: Browse	☞ Browse
		Browsing Mode Indicator	Icon: Eyeglasses Text: Browse Mode On	☞ Browse Mode On
		End Browse Mode	Icon: Eyeglasses slashed across Followed with Text: End Browse	⊘ End Browse
Links Additional Materials	Links to other elements the IETM knows how to get to or return from.	GOTO means that the user cannot return via the ETM to this point (possibly through history, but return here is not guaranteed). NOTE:: Clear the gosub indication if set.	Icon: Arrow Pointing Down. Text: Goto	↓ Goto
		GOSUB means that the user can return here from the remote location.	Icon: Points Both Directions pointing left and right. Text: Gosub	↔ Gosub

		RELATIONAL means that related materials (possibly more than one) are available. Works exactly like a gosub.	Icon: Book Stack Text: Related Materials	☳Related Materials
		Gosub/Relational in process indication/Return Icon	Icon: Points Both Directions pointing left and right Text: Return	↔ Return
External Links	External Systems linked into the IETM.	Link to Supply to Check on Part.	Icon: Supply Truck Text: Supply	🚌 Supply
		Link to Maintenance Administration (e.g., AME or game, etc.).	Icon: Hammer and wrench Text: Maint Admin	⚒ Maint Admin
		Call supervisor, QA	Icon: Telephone Text: Call QA/Supervisor	☎Call
Classification Bar	Bar across the top of the "body" area to remind user of classification/ distribution.	Unclassified	Text: No text unless distribution markings are required. __blue__ background	Color Code for Block: #33FFFF
		Confidential	Text: "Confidential" center in the middle of the screen with a __light green__ background	Color Code for Block: #00CC00 CONFIDENTIAL
		FOUO (For Official Use Only) FOUO is a distribution marking and can apply to Unclassified and Classified data	Text: "FOUO" center in the middle of the screen with a __light blue__ or __light green__ background or hyphenated with the classification, such as CONFIDENTIAL-FOUO	FOUO FOUO

		NoForn NoForn is a distribution restriction and can apply to Unclassified and Classified data	Text: "NoForn" center in the middle of the screen with a __light blue__ or __light green__ background or hyphenated with the classification, such as CONFIDENTIAL-NOFORN	**NOFORN** **NOFORN**
		Secret	Text: "Secret" center in the middle of the screen with a _red_ background	Color Code for Block: #FF0000 **SECRET**
		Top Secret	Text: "Top Secret" (white) center in the middle of the screen with an _orange_ background	Color Code for Block: #FF9900 **TOP SECRET**
Classification Markings	Icon in Status footer to remind user of classification/ distribution.	Unclassified	Icon: Open Lock (Black)	🔓 (U)
		Confidential	Icon: Locked Lock (Blue) with "C"	🔒 (C)
		NoForn	Icon: Locked Lock (Blue) with "NF"	🔒 (NF)
		Secret	Icon: Red Lock with "S"	🔒 (S)
		Top Secret	Icon: Orange Lock with "TS"	🔒 (TS)
Session Controls - (aka EXIT Modes)	Pause, Resume or Exit a Session	Session Suspend	Icons: Pause (two vertical bars) Text: Pause Session	II Pause Session
		Session Resume	Session Resume	Session Resume
		Session Complete- Normal Exit	Icon: Check Mark Text: Complete	✓ Complete
		Session Abort Only in Browse Mode	Icon: Rain Clouds	☁ Abort
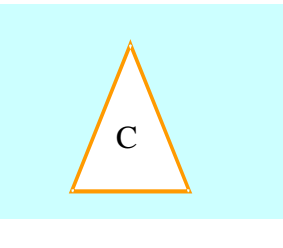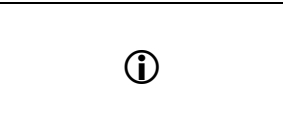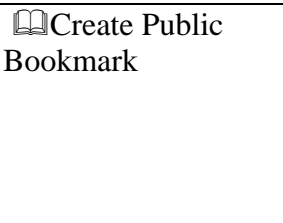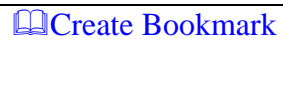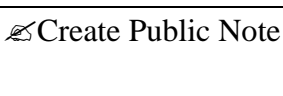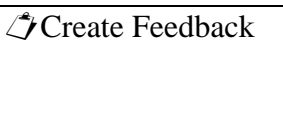
Graphic Hotspot Icon	For use on graphics with hotspots.	Hot Spot Indication	ICON: Text or Cross-Hair When highlighting text for selectable elements (hot-spots), either use color changes or increase in background intensity .Use the standard web practice of text that is blue underlined and turns purple after followed.	**Click Me** or ⊕
Search		Search Local TOC	Icon: Magnifying Glass	⚲ :Search TOC
		Search Library	Icon: Magnifying Glass	⚲ :Search Library
		Search Local Document	Icon: Magnifying Glass	⚲ :Search Document
		Search Again/Find Next	Test: Repeat Search Search Up (Double Arrow Up) Search Down (Double Arrow Down)	Repeat Search
Working Under: Danger Warning Caution Note	In IETMs which can keep track of what Dangers, Warnings, Cautions and Notes Apply - These Symbols would be used to indicate the user is working under one or more of these conditions. Optionally, the number applied to a given situation can be displayed as an external script.	Minimized Danger Icon Danger(s) Apply	Icon: Red Triangle with "D"	△ D
		Minimized Warning Icon Warning(s) Apply	Icon: Red Triangle with "W"	△ W

		Minimized Caution Icon Caution(s) Apply	Icon: Orange Triangle with "C"	C
		Minimized Note Icon Note(s) Apply	Icon: Circle with "I" in middle	ⓘ
Bookmarks and Notes, Annotations CREATION	Icon used to indicate that you can create	Public Bookmark	Icon: Open Book (Black)	Create Public Bookmark
		Private Bookmark	Icon: Open Book (Blue)	Create Bookmark
		Public Note	Icon: Hand holding pencil (Black)	Create Public Note
		Private Note	Icon: Hand holding pencil (Blue)	Create Note
TMDER Submission		Submit TMDER NOTE: Fires off another Out-Line Window with the fill-in form that can be moved by the user so they can reference the ETM they are submitting the TMDER on.	Icon: Tag Out Symbol Text: Submit TMDER	Submit TMDER
		Comment	Icon: Piece of paper with upper right corner turned in Text: Create Comment	Create Comment
		Suggested Changes/ Feedback	Icon: Clipboard Text: Create Feedback	Create Feedback
		Form Complete - Submit	Button with Text: Submit	

		Form Cancel	Button with Text: Cancel	
Bookmarks and Notes, Annotations TRAVERSE TO or READ.	Icon used to indicate that you can go to and read a bookmark, or that you are reading a bookmark.	Public Bookmark	This is a Bookmark: Icon: Open Book-Black Text: None Go to a Bookmark: Icon: Open Book-Black Text: Goto Bookmark	📖 📖Goto Bookmark
		Private Bookmark	Icon: Open Book (Blue) Text: None	📖
		Public Note	This is a Note: Icon: Hand holding pencil-Black Text: None Read a Note: Icon: Hand holding pencil-Black Text: Read Note	✍ ✍Read Note
		Private Note	Icon: Hand holding pencil-Blue Text: None	✍
Print Icons	Clicking on Print produces a dialog box with the following choices.	Print ETM Graphic	Icon: Printer	🖨Print
		Print Active ETM Window	Icon: Printer	🖨Print
		Print ETM Page	Icon: Printer	🖨Print
		Print ETM on Demand	Icon: Printer	🖨Print
Audio Control Icons		Access Volume Controls	Icon: Speaker Text: Audio Controls	◀Audio Controls
		Volume Up	Icon: Rising Triangle	◢
		Volume Down	Icon: Descending Triangle	◣
		Mute	Icon: Speaker with slash through it Text: Mute	🔇 Mute
		Play	Icon: Small Triangle Text: Play	▷ Play
		Stop	Icon: Small Square Text: Stop	□ Stop
		Turn on Voice Input Recognition	Icon: Ear with sound coming in Text: Voice Recog On	👂🎵 Voice Recog On

		Turn off Voice Recognition	Icon: Ear with sound slashed across Text: Voice Recog Off	Voice Recog Off
		Turn on Voice Output	Icon: Head with sounds coming out	
		Turn off Voice Output	Icon: Head with sounds slashed across	
General Navigation		Next	Icon: Right Pointing Arrow Text: Next	Next ➔
		Previous [Chronological]	Icon: Left Pointing Arrow Text: Previous	⬅Previous
		Back [Logical]	Icon: Arrow Pointing up and left Text: Back	Back
		TOC	Icon: Stack of documents Text: Contents	Contents
		Undo	Icon: Curled Arrow CCW Text: Undo	↺Undo
		User Navigation Panel Minimized	Icon: Compass Rose Text: Navigation	Navigation
		Parts (IPB/ RPSTL)	Icon: Number 10 in a circle Text: Parts	⑩Parts
		Diagnostics	Icon: +/- Text: Diagnostics	+/- Diagnostics
		Wiring Diagrams	Icon: Off Page Connector with X inside Text: Wiring	⊠ Wiring
		Support Equipment	Icon: Waving Flag	
		Training	Icon: Schoolhouse Text: Training	Training
		Multimedia Icon	Icon: Movie Projector Text: Show	Show
		Full Motion Video Icon	Icon: Clapboard Text: Video	Video
		Animation Icon	Icon: Comedy and Tragedy Masks Text: Animation	Animation

Graphic Reference	Icon: Still Camera Text: Graphic	Graphic
Graphics Submenu	Multiple Icons on a pop-up: Disk to allow save Printer to allow printing Envelope to allow emailing Folder to allow saving in photo area.	
Zoom Graphic	Icon: Magnifying Glass with + for Zoom In and with - for Zoom Out	
Pan Graphic	Icon: Hand Note: Hand just above is acceptable	
Acronyms/ Abbreviations	Icon: aA Symbol Text: Acronyms	Acronyms
Acronyms/ Abbreviations	Icon: aA Symbol Text: Abbreviations	Abbreviations
Help	Icon: Question Mark Text: Help	? Help
Version Information	Icon: Interstate Road Sign Text: Version Info	Version Info
Performance Indicator	Icon: Hour Glass	
Return UI to Default	Icon: Picture Frame with panes internal with Smiley Face	
Reference to Text	Icon: Standard Web Practice - Blue Underlined Text as link to Text	See Reference 1
Reference to Table	Icon: Black square surrounded by two additional squares	
Reference to External Object	Icon: Lightning Bolt	
Related Materials	Icon: Stack of books Text: Related Materials	Related Materials
Step Completed	Icon: Checkbox	Adjust

APPENDIX C TECHNICAL DATA SET CHANGE HANDLING

OVERVIEW

The proper handling of change information and the production of change packages are very important in the configuration management of electronic source data and presentation to the users of technical data sets. Production of technical data set change packages from SGML/XML begins with SGML/XML change tagging. Automatic labeling of these change tags can then take place in a consistent manner. Publishing of the SGML/XML then continues with different visual treatments for electronic and paper versions of the technical data sets.

The IDPWG SGML/XML Community has agreed to the following ground rules:

- Developers should be migrating toward auto-generation of the labels, numbering, and cross-references (e.g., xrefs).
- All SGML/XML IDs should be persistent.
- Automatically generate the Table of Contents (TOC), List of Illustrations (LOI), List of Tables (LOT), List of Changes (LOC).
- Responsibility of the preparing activity to maintain the integrity of their data. Whether the deleted information is retained within the SGML/XML is up to the preparing activity.
- A means to retrieve a previous version, archived, will be ALWAYS be maintained.

SGML/XML Tags

The support of SGML/XML change tagging uses an SGML/XML element, called CHANGE, to support in-line changes (tables, figures, steps, paragraphs, and reference list, etc.).

Using the CHANGE element. Two SGML/XML attributes, CHNGLEVEL and CHNGTYPE, exist on all elements in the DTD to support higher level changes within the content of the data set. An example of before change and after change SGML/XML is shown below. Notice that the CHNGLEVEL attributes for the publish unit (e.g. PARTVOL2) starts as "0" but after the changes, the CHNGLEVEL attributes and the CHANGE element are both equal to "3" having progressed through "2". This will allow the publishing system (especially IETMs) to distinguish between new and old changes so that old changes are not inadvertently marked as changes in a current production cycle.

Before Change Tags:
```
<ssm ID="TEST1" DOCSTAT="FORMAL" BOATTYPE="VIRGINIA">
<vol2 ID="ABC" CHNGLEVEL="0"><title>SYSTEM</title>
<PARTVOL2 ID="SSM2-0" LABEL="0" CHNGLEVEL="0">
……..
<para CHNGLEVEL="0">Look at the spoon.</para>
……</ssm>
```

After Change Tags:

<ssm ID="TEST1" DOCSTAT="FORMAL" BOATTYPE="VIRGINIA">
<vol2 ID="ABC" **CHNGLEVEL="3"**><title>SYSTEM</title>
<PARTVOL2 ID="SSM2-0" LABEL="0" CHNGLEVEL="3">
……
<para CHNGLEVEL="0">Look at the**<change CHNGLEVEL="1"
CHNGTYPE="DELETE">spoon</change><change CHNGLEVEL="2"
CHNGTYPE="ADD">moon</change><change CHNGLEVEL="3"
CHNGTYPE="DELETE">moon</change><change CHNGLEVEL="3"
CHNGTYPE="ADD">loon</change>**.</para>
……. </ssm>

NOTE: The change level for the paragraph is only changed when the paragraph is added, deleted, or when the change tags are removed at revision and the change levels reset to "0".

SGML/XML Change Processing
The processing of SGML/XML change tags for publication requires consideration of the following: 1) handling of deleted information, 2) auto-enumeration, and 3) handling of change information at revision.

First, the method of handling deleted information must be analyzed and defined. For example, if a labeled figure is deleted from a data set, then the figure is removed but placeholders in the content and within the table of contents (TOC) typically appear indicating that the figure has been deleted. The change processing of every element identified in the DTD that carries change attributes must be defined/handled.

Second, auto-enumeration occurs in those process lanes where intelligent SGML/XML is being used in conjunction with an intelligent publishing system capable of automatically and intelligently labeling SGML/XML. If the SGML/XML already contains hard-coded labels that do not require modification, then the auto-enumeration factor does not come into play. Under the assumption that the SGML/XML is intended for use with an intelligent publishing system then that publishing system must be capable of properly handling the labeling of added and deleted elements within the SGML/XML.

For example, if a new object (e.g. a SUBPARA1) is added in between two existing objects then the label for the new object must be labeled. This could be a renumbering of the new and following objects or may require A/B type labeling (e.g. Figure 4A). The contract specifications should identify how to label the changes.

Third, at revision, all change tags are removed and the SGML/XML is basically re-baselined.

Publishing

Visual treatments for both paper and electronic products must be addressed. The treatments are different and can be handled by using the SGML/XML tags and/or a configuration management scheme.

For the paper product, developers use a configuration management approach to identifying differences between the previously distributed paper product and the new one. Commercial-off-the-shelf software is used to determine the difference (aka, "diffy") between the previous and current versions of the product to produce change bars on the sides of the pages next to the detected differences.

For the electronic technical data set product, developers use the SGML/XML attribute, CHNGLEVEL, of the element being processed and of the publish unit to determine whether or not to apply a change style. For example, if the CHNGLEVEL of the publish unit is "4" and the CHNGLEVEL of the element in question is "2," then no change style is applied to the element. However, if both the CHNGLEVEL on the publish unit and on the element are both equal to "4," then a change style is applied to the element. The optional change bars, if used, should be added at left side of line on which the change occurs.

Example of changes of word(s) within an element at various change levels:

Chnglevel	"delete"	"add"	Output
0			Look at the spoon
1	~~Spoon~~		Look at the ***
2		Moon	Look at the *moon*
3	~~Moon~~	Loon	Look at the *loon*

Example of changes of paragraphs or steps,or list item within an section at various change levels:

Chnglevel	"delete"	"add"	Output
0			1. Look at the spoon. 2. Look at the lagoon.
1	~~1. Look at the spoon~~		1. *[Deleted]* 2. Look at the lagoon.
2		Look at the moon	1. *Look at the moon* 2. Look at the lagoon.
3	~~Look at the moon~~	Look at the loon	1. *Look at the loon* 2. Look at the lagoon.

Types of Changes and Impact to Paper and Electronic Medium

Type Change	Paper	IETM
Revision * Note all Changes should be rolled into a Revision.	Issue new data set.	Issue new electronic technical data set.
	All changes are part of the baseline.	All changes are part of the baseline and change markings are removed.
	No change bars.	No change bars.
	Pages are consecutively numbered.	---
	All A or B pages are removed, and pages are consecutively renumbered.	No A or B numbers.
	All elements (Tables, Figures, Steps, and Paragraphs, Reference Lists, etc.) are consecutively numbered	All elements (Tables, Figures, Steps, and Paragraphs, Reference Lists, etc.) are consecutively numbered.
	No change level is displayed on the bottom of the page for the chapter.	The change level displayed for the IETM is "0".
	TOC is updated.	TOC is updated
	While incorporating changes into revision, compile a list of changes and make list available to user via TOC.	While incorporating changes into revision, compile a list of changes and make list available to user via TOC.

Type Change	Paper	IETM
Re-Issue Similar to a Revision but at the Change Level. A method of "cleaning-up" a data set that has received many changes over its life-cycle.	Print entire chapter.	Issue new electronic technical data set.
	All changes are part of the baseline at the highest change level.	Change level of the baseline is at the highest change level and individual change markings are removed.
	No change bars.	No change bars.
	All A or B pages are removed and the pages are consecutively renumbered.	---
	All elements (Tables, Figures, Steps, and Paragraphs, Reference List, etc.) are consecutively numbered.	All elements (Tables, Figures, Steps, and Paragraphs, Reference List, etc.) are consecutively numbered. No A or B numbers.
	The highest change level is displayed on all pages at the bottom.	The change level displayed for the IETM is the highest change level.
	TOC is updated	TOC is updated.
	While incorporating changes into re-issue, compile a list of changes and make list available to user via TOC.	While incorporating changes into re-issue, compile a list of changes and make list available to user via TOC.
Change	Only changes for this distribution receives the change bar, optional	Only changes for this distribution receives the change bar, optional
	Highest change level receives the change bar and the change level displayed on the bottom of the page.	The change level displayed for the IETM is the highest change level.
	TOC is updated if delete or add a figure, table, section, etc. (i.e. affecting a TOC worthy element.	TOC is updated.

Type Change	Paper	IETM
	While processing changes, compile a list of changes and make list available to user via TOC.	While processing changes, compile a list of changes and make list available to user via TOC.
ACN or RAC	Handled as message ACNs.	Handled as a Change as part of the next update.

SGML/XML Change Attributes

Attribute	Explanation	Values
Chnglevel	Change Level for Change to be distributed	Blank (or "0"), "1", "2", "3"... Note: Translation determines alpha or numeric on output.
Chngtype	Type change whether inserting or deleting	"add" and "delete"

These attributes can occur with the <change> element to modify a word or words as well as on core primitive constructs such as: <para>, <para0>, <section>, <table>, <figure>, <warning>, <caution>, <note>, <foldout>, <subpara>, <seqlist>, <item>, <step>, etc. to change the whole core primitive construct.

NOTE 1: The process of creating a "reissue" or "revision" version of the document modifies these attributes through an automated process. The change tags are removed at 'revision' and the change levels reset to "0".

NOTE 2: Responsibility of the preparing activity to maintain the integrity of their data. Whether the deleted information is retained within the SGML/XML is up to the preparing activity. A means to retrieve a previous version, archived, will be ALWAYS be maintained.

NOTE 3: The SGML/XML value of the "chnglevel" attribute will be a positive integer starting at zero. Translation to an alpha (such as "B") will be done by the process utilizing the SGML/XML not within the SGML/XML.

Actions for Tag Additions and Deletions

Tag	Add	Delete
A Word, Group of Words, or Sentence within an Element	A change bar, optional, should show up on the line where the word(s) was added. New words added should be in *red italics.*	Information should be completely removed within the text. If no "add" for this chnglevel (or higher chnglevel), indicate deleted information with three red asterisks (***). A change bar, optional, should show up on the row where the information was deleted.
	Wrap the change with the <change> element. Set the attribute values as follows: 'chngtype' ="add" 'chnglevel' enter the applicable value for this change level.	Wrap the change with the <change> element. Set the attribute values as follows: 'chngtype' ="delete" chnglevel' enter the applicable value for this change level.
Section	The section number is either 1 or 1A depending on the impact of the location. A change bar, optional, should show up on the entire section. New words added should be in *red italics*.	The section should be completely removed within the text. If no "add" for this chnglevel (or higher chnglevel), the section number should remain with the word *[Deleted]* in red italics beside it . A change bar, optional, should show up on the now deleted paragraph within the text.
	On the <section> element, set the following attributes as below: chngtype' ="add" 'chnglevel' enter the applicable value.	On the <section> element, set the following attributes as below: 'chngtype' ="delete" chnglevel' enter the applicable value
	NOTE: The change level for the section is changed only when the section is added or deleted, or when the change tags are removed at revision and the change levels reset to "0".	NOTE: The change level for the section is changed only when the section is added or deleted, or when the change tags are removed at revision and the change levels reset to "0".

Tag	Add	Delete
Para	A change bar, optional, should show up on the entire added paragraph. The new paragraph should be in *red italics*. . On the <para> element, set the following attributes as below: chngtype' ="add" 'chnglevel' enter the applicable value NOTE: The change level for the paragraph is changed only when the paragraph itself is added or deleted, or when the change tags are removed at revision and the change levels reset to "0".	The paragraph should be completely removed within the text. If no "add" for this chnglevel (or higher chnglevel), the paragraph number should remain with the word *[Deleted]* in red italics beside it . A change bar, optional, should show up on the now deleted paragraph within the text. On the <para> element, set the following attributes as below: 'chngtype' ="delete" chnglevel' enter the applicable value NOTE: The change level for the paragraph is changed only when the paragraph itself is added or deleted, or when the change tags are removed at revision and the change levels reset to "0".

Tag	Add	Delete
Figure	The figure number is either 1 or 1A depending on the impact of the location. A change bar, optional, should show up on the entire figure. The figure number and caption added should be in *red italics*. On the \<figure\> element, set the following attributes as below: chngtype' ="add" 'chnglevel' enter the applicable value. NOTE: The change level for the figure is changed only when the figure is added, deleted, or when the change tags are removed at revision and the change levels reset to "0".	The figure should be completely removed. If no "add" for this chnglevel (or higher chnglevel), the figure number should remain with the word *[Deleted]* in red italics beside it . A change bar, optional, should show up on the now deleted figure. On the \<figure\> element, set the following attributes as below: chngtype' ="delete" 'chnglevel' enter the applicable value. NOTE: The change level for the figure is changed only when the figure is added, deleted, or when the change tags are removed at revision and the change levels reset to "0".
Foldout	The foldout number is either 1 or 1A depending on the impact of the location. A change bar, optional, should show up on the entire foldout. Foldout caption should be in *red italics*. On the \<foldout\> element, set the following attributes as below: chngtype' ="add" 'chnglevel' enter the applicable value. NOTE: The change level for the foldout is changed only when the foldout is added or deleted, or when the change tags are removed at revision and the change levels reset to "0".	The foldout should be completely removed. If no "add" for this chnglevel (or higher chnglevel), the foldout number should remain with the word *[Deleted]* in red italics beside it . A change bar, optional, should show up for the now deleted foldout title. On the \<foldout\> element, set the following attributes as below: chngtype' ="delete" 'chnglevel' enter the applicable value. NOTE: The change level for the foldout is changed only when the foldout is added or deleted, or when the change tags are removed at revision and the change levels reset to "0".

Tag	Add	Delete
Para0	The para0 number is either 1 or 1A depending on the impact of the location. A change bar, optional, should show up on the entire para0. New para0 added should be in *red italics*. On the \<para0\> element, set the following attributes as below: chngtype' ="add" 'chnglevel' enter the applicable value. NOTE: The change level for the para0 is changed only when the para0 is added, deleted, or when the change tags are removed at revision and the change levels reset to "0".	The para0 should be completely removed. If no "add" for this chnglevel (or higher chnglevel), the para0 number should remain with the word *[Deleted]* in red italics beside it . A change bar, optional, should show up on the now deleted para0 Title. On the \<para0\> element, set the following attributes as below: chngtype' ="delete" 'chnglevel' enter the applicable value. NOTE: The change level for the para0 is changed only when the para0 is added, deleted, or when the change tags are removed at revision and the change levels reset to "0".
Subpara 1, 2, 3..	The subpara 1,2,3… number is either 1 or 1A depending on the impact of the location. A change bar, optional, should show up on the entire subpara. New subpara added should be in *red italics*. On the \<subpara 1,2,3 …\> element, set the following attributes as below: chngtype' ="add" 'chnglevel' enter the applicable value. NOTE: The change level for the subpara is changed only when the subpara is added, deleted, or when the change tags are removed at revision and the change levels reset to "0".	The subpara should be completely removed. If no "add" for this chnglevel (or higher chnglevel), the subpara 1,2,3 … number should remain with the word *[Deleted]* in red italics beside it . A change bar, optional, should show up on the now deleted subpara. On the \<subpara 1,2,3 …\> element, set the following attributes as below: chngtype' ="delete" 'chnglevel' enter the applicable value. NOTE: The change level for the subpara is changed only when the subpara is added, deleted, or when the change tags are removed at revision and the change levels reset to "0".

Tag	Add	Delete
Seqlist	A change bar, optional, should show up on the entire added seqlist. The new seqlist should be in *red italics*. On the <seqlist> element, set the following attributes as below: chngtype' ="add" 'chnglevel' enter the applicable value NOTE: The change level for the seqlist is changed only when the seqlist itself is added, deleted, or when the change tags are removed at revision and the change levels reset to "0".	The seqlist should be completely removed. If no "add" for this chnglevel (or higher chnglevel), the seqlist number should remain with the word *[Deleted]* in red italics beside it . A change bar, optional, should show up on the now deleted seqlist. On the <seqlist> element, set the following attributes as below: chngtype' ="delete" 'chnglevel' enter the applicable value NOTE: The change level for the seqlist is changed only when the seqlist itself is added, deleted, or when the change tags are removed at revision and the change levels reset to "0".
Item or Step	A change bar, optional, should show up on the <item> or <step> added. If the item or step is added between items or steps, the numbers increase and the first line of each "new" <item> or <step> shows a change bar. New items or steps added should be in *red italics*. On the <item> or <step> elements, set the following attributes as below: 'chngtype' ="add" 'chnglevel' enter the applicable value NOTE: The change level for the <item> or <step> is changed only when the <item> or <step> itself is added, deleted, or when the change tags are removed at revision and the change levels reset to "0".	The <item> or <step> should be completely removed. If no "add" for this chnglevel (or higher chnglevel), the <item> or <step> number should remain with the word *[Deleted]* in red italics beside it . A change bar, optional, should show up on the now deleted <item> or <step>. On the <item> or <step> elements, set the following attributes as below: 'chngtype' ="delete" 'chnglevel' enter the applicable value NOTE: The change level for the <item> or <step> is changed only when the <item> or <step> itself is added, deleted, or when the change tags are removed at revision and the change levels reset to "0".

Tag	Add	Delete
Warning, Caution, and Note	A change bar, optional, should show up on the entire added Warning, Caution or Note. The new Warning, Caution, or Note should be in *red italics*.	The Warning, Caution or Note should be completely removed. If no "add" for this chnglevel (or higher chnglevel), the Warning, Caution or Note should be replaced with the word Warning, Caution or Note (as appropriate) with *[Deleted]* in red italics beside it . A change bar, optional, should show up on the now deleted Warning, Caution or Note.
	On the Warning, Caution or Note element, set the following attributes as below: chngtype' ="add" 'chnglevel' enter the applicable value	On the Warning, Caution or Note element, set the following attributes as below: chngtype' ="delete" 'chnglevel' enter the applicable value
	NOTE: The change level for the Warning (W), Caution (C) or Note (N) is changed only when the W,C,N itself is added, deleted, or when the change tags are removed at revision and the change levels reset to "0".	NOTE: The change level for the Warning (W), Caution (C) or Note(N) is changed only when the W,C,N itself is added, deleted, or when the change tags are removed at revision and the change levels reset to "0".

Tag	Add	Delete
Table	The table number is either 1 or 1A depending on the impact of the location. A change bar, optional, should show up on the entire table. The added table should be in *red italics*. On the <table> element, set the following attributes as below: chngtype' ="add" 'chnglevel' enter the applicable value. NOTE: The change level for the table is changed only when the table is added, deleted, or when the change tags are removed at revision and the change levels reset to "0".	The table should be completely removed within the text. If no "add" for this chnglevel (or higher chnglevel), the table number should remain with the word *[Deleted]* in red italics beside it . A change bar, optional, should show up on the now deleted paragraph within the text. On the <table> element, set the following attributes as below: chngtype' ="delete" 'chnglevel' enter the applicable value. NOTE: The change level for the table is changed only when the table is added, deleted, or when the change tags are removed at revision and the change levels reset to "0".
Row of a Table	A change bar, optional, should show up on the row where the information was ADDED. New words added should be in *red italics.* To add a <row> to a <table>, set the following attributes on the <row> element to: chngtype' ="add" 'chnglevel' enter the applicable value in the appropriate attribute.	The original text should be completely removed within the row. If no "add" for this chnglevel (or higher chnglevel), the first cell of the row should remain with the word *[Deleted]* in red italics inside . A change bar, optional, should show up by that row. To delete a <row> to a <table>, set the following attributes on the <row> element to: chngtype' ="delete" 'chnglevel' enter the applicable value in the appropriate attribute.

Tag	Add	Delete
Table Entry	A change bar, optional, should show up on the row where the information was added. New words added should be in *red italics*. See the para element for setting the element attributes.	Information should be completely removed within the text. If no "add" for this chnglevel (or higher chnglevel), indicate deleted information with three red asterisks (***). A change bar, optional, should show up on the row where the information was deleted. See the para element for setting the element attributes.

APPENDIX D OPERATING DOMAINS AND LINKING

D.1 INTRODUCTION

To better communicate the issues associated with designing, delivering, and deploying similarly styled IETMs, it is necessary to define various operating domains. The use of these domains will help to simplify the discussion and allow isolation of certain issues to a given domain. If a developer does not have a requirement to support a given domain, then any issue that only applies to that domain may be ignored. For example, if an IETM is only to be deployed as a stand-alone product (i.e., no library interaction and no requirement for printing), then several domain issues can be ignored.

The focus of this guide is the IETM Domain; see Section D.4 below. However, in order to properly take into account the greater web functions, deployment strategies and associated implications, the other domains need to be defined so that they can be understood and addressed by the developer. Throughout this appendix, issues that only apply in a given domain will be so identified.

D.2 LINKING

Another critical focus area is linking, or cross-referencing, an inherent and powerful feature of the web, that will allow seamless interaction between a variety of IETMs produced by a variety of activities. Much of the power of web-enabled products centers on this feature. A discussion of cross-referencing and linking must be associated with and defined in terms of the various domains. For the purposes of this guide, the following descriptions for links (cross-references) apply and will be used in the following sections defining the various domains.

D.2.1   Basic Link Types
See Figure D-1 below for a diagram of these basic link types.

♦   **LINK** – a link from anywhere within one file to another location anywhere in that same file.

♦   **FILE LINK** – a link from anywhere within one file to the beginning of another file, but not a specific location within that other file. May be resolved two ways, either directly to the file or via http.

♦   **FILE LINK TO TARGET** - a link from anywhere within one file to a specific location in another file. May be resolved two ways, either directly to the file or via http.
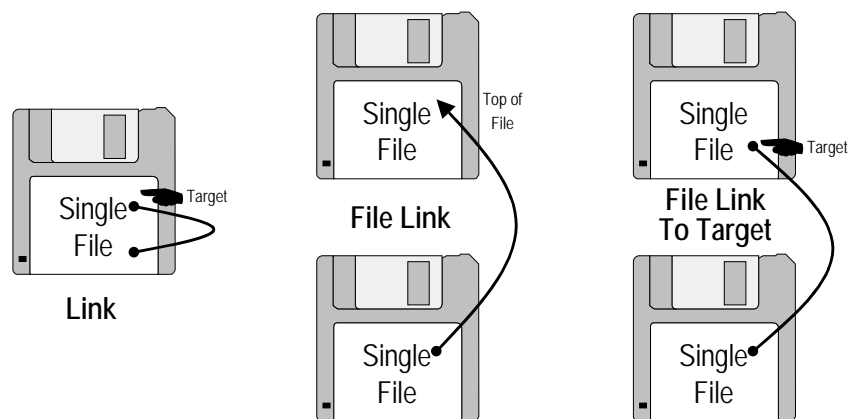
Figure D-1 Basic Link Types

D.2.2   Advanced Link Types
See Figure D-2 below for a diagram of advanced link types.

♦ **FILE LINK VIA INTERMEDIARY** - a link from anywhere within one file to the
beginning of another file, but not a specific target within that file via an intermediary
program. These links could either be via known links in the intermediary index or
they may not be known. In the case of the latter, the intermediary program would
have to know how to handle file links to products that have not been pre-indexed (i.e.,
possibly by using another index similar to a web-based indexed server with query
capability, or these types of links would not work properly).

♦ **FILE LINK VIA INTERMEDIARY TO TARGET** - a link from anywhere within
one file to a specific target in another file via an intermediary program. These links
to targets could either be via known or unknown links with targets in the intermediary
index. It is assumed that the receiving program knows how to handle calls with
targets. In the case of unknown links several conditions may exist:

(1) the intermediary program doesn't contain a file link;

(2) the intermediary program does contain a file link, but no target;

(3) the intermediary program contains file links with targets, but not the exact one
required.

For these situations, the intermediary program would have to know how to handle file
links with targets to products that have not been pre-indexed (i.e., possibly by using
another index similar to a web-based indexed server with query capability, or these
types of links would not work properly).

Developers need to understand and define, in advance, the types of linking/cross-referencing they will support, and in which, as well as across which, domains they will support them, since these decisions will likely affect how the technical manual is authored and published.
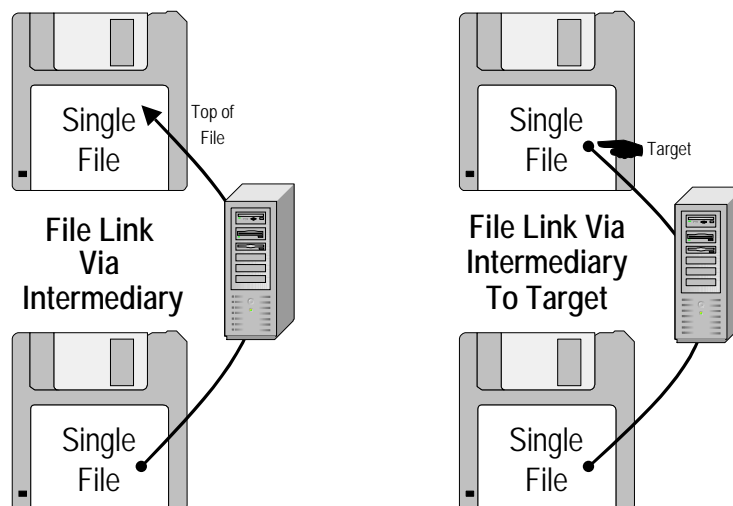

Single File
Top of File
File Link Via Intermediary
Single File

Single File
Target
File Link Via Intermediary To Target
Single File

Figure D-2 Advanced Link Types

D.3 PRINT/PAPER DOMAIN

This area is associated with the production of hardcopy from the deployed IETM as opposed to camera-ready hardcopy that may be produced separately from the deployed IETM. Producing hardcopy from the deployed IETM can be done in a variety of ways:

♦ Natively within the browser by printing windows, selections, frames, etc., using built-in features of the browser

♦ Non-natively, but still within the browser, by using specialized scripting and/or third party add-ons (e.g., Adobe PDF).

Natively printing from the browser works reasonably well with expected results. It will not produce a traditional hardcopy output with all elements like a table of contents, etc. especially with the wide use of frames. This method of printing should be reserved for printing snapshots of information that can be carried about for use in maintenance, etc.

Printing via the use of specialized scripting or third party add-ons shows promise for allowing the end user a pseudo-capability for Print On Demand (POD). In essence, there are two versions of the data stored, one optimized for on-line viewing, and one representing the traditional hardcopy version. It should be noted that having PDF version of graphics and foldouts on the CD may facilitate an effective viewing capability. If an IETM is required to be delivered in a hardcopy form, then an inexpensive method is to produce PDF and include it on a

CD. If a given IETM is not required to be delivered in hardcopy form, then including a PDF is probably not cost-effective.

It should be noted that printing anything other than 8 ½-inch by 11-inch pages might be problematic because there is no guarantee that the end user site will have the capability to print larger sizes. If the foldouts are included the main body PDF file, they will likely produce unreadable results when printed. For this reason, foldouts and large tables, for example, will require special handling.

D.4   IETM DOMAIN

The IETM domain is the primary focus of this guide, whose goal is to deliver to the end user a variety of IETMs produced by a variety of activities such that all look, feel, and operate similarly. This domain is split into two sub-domains, Single IETM and Multiple IETM, to differentiate between single IETMs and collections of IETMs, or a family of related documents, delivered together by a single activity.

D.4.1   Single IETM Domain

The Single IETM Domain (see Figure D-3 below) is the lowest-level domain discussed in this guide. It constitutes a single document, usually represented by a single Technical Manual Identification Number (TMIN). It may be delivered as a single file or as many files depending on the overall size. While splitting it up may make sense from a size perspective, this may cause other problems (i.e., now searches across the IETM cannot be accomplished with the native browser menu search selection). This document will likely have many internal LINKS, FILE LINKS, and FILE LINKS TO TARGETS.   NOTE: Internal in this context means within one TMIN.
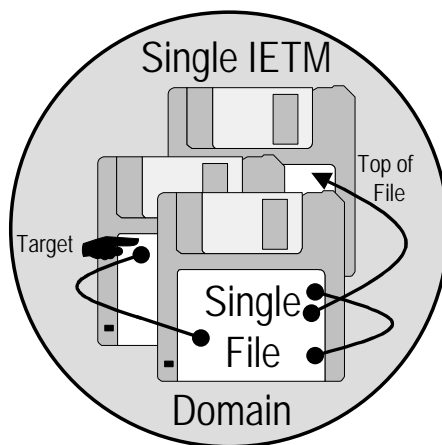

Figure D-3 Single IETM Domain

D.4.2   Multiple IETM Domain

The Multiple IETM Domain (see Figure D-4 below) is the next level up domain. It constitutes a collection or family of related documents (e.g., related TMINs). An example would be the Ship Systems Manual (SSM) or an equipment manual where each volume has its own

TMIN. It will most assuredly be delivered as many files. In addition to the internal links found in the Single IETM Domain, there will likely be many external FILE LINKS, and FILE LINKS TO TARGETS between the single IETM Domains which makeup this Multiple IETM Domain. There also will exist FILE LINKS VIA INTERMEDIARY to IETMs outside the Multiple IETM Domain; see Library Domain below.
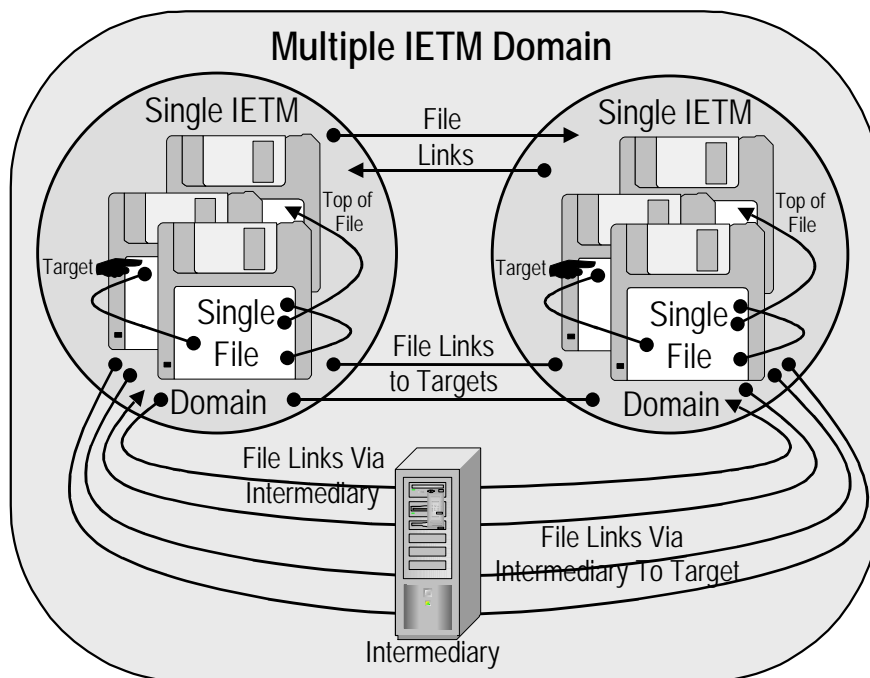

Figure D-4 Multiple IETM Domain

D.5   *LIBRARY DOMAIN*

The Library Domain (see Figure D-5 below) is the next level up domain above the Multiple IETM Domain and introduces the concept of some controlling processes, or an intermediary, to help resolve links. This intermediary process may simply be normal web services or may be some 3rd party specialized application. It constitutes many documents and/or families of documents (e.g., many TMINs, some totally unrelated to others). It will be made up of many files and possibly even require different browsers. In addition to the links found in the Single and Multiple IETM Domain(s), there will be many external FILE LINKS VIA INTERMEDIARY, both with and without TARGETS.

NOTE: The developer needs to understand the mechanics of the Library Domain to ensure the methodology of link processing.
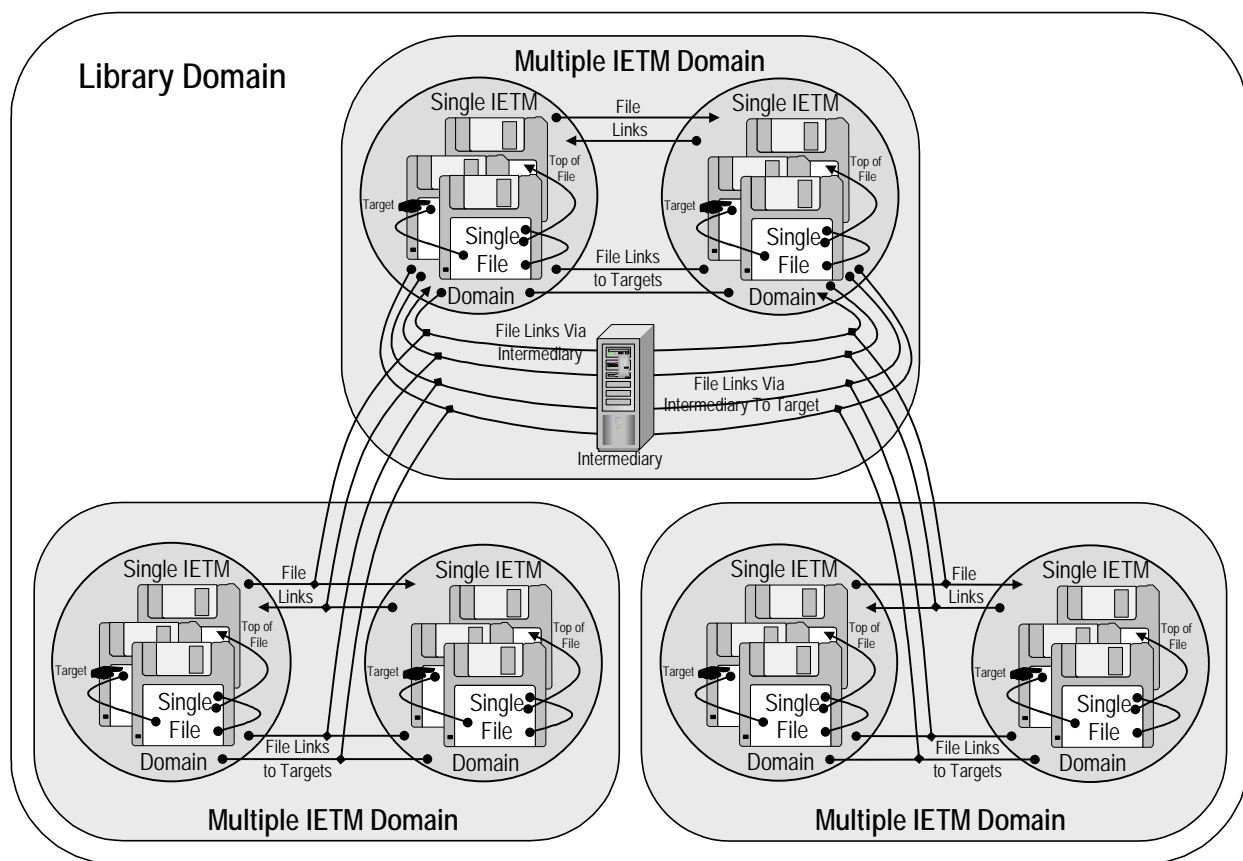
Figure D-5 Library Domain

ATIS is an example of a Library Domain controlled by a third-party process to assist in the resolution of links. In the case of ATIS, it fulfills the role as a library manager by keeping track of versions of products and providing configuration-based indices to help identify applicable products, primarily engineering drawings and technical manuals.   A client-server version of ATIS now exists, and a web version is under development.

D.6   NET DOMAIN

The Net Domain is the next-level-up domain above the Library Domain and introduces web servers. In addition to the links found in the other domains, there will likely be links between the servers.

The Net Domain (see Figure D-6 below) can consist of an Intranet and Internet. Either one of these may or may not be integrated with the Library Domain. (If the Library Domain uses simple web services, then they are effectively the same.)

Figure D-6 Net Domain